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U.S. BOAT & SHIP MODELER

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KRICK 'TINA'

MRC NORDIC
DEEP-VEE TURBO

BUILD:

ELECTRORIGGER 6-8

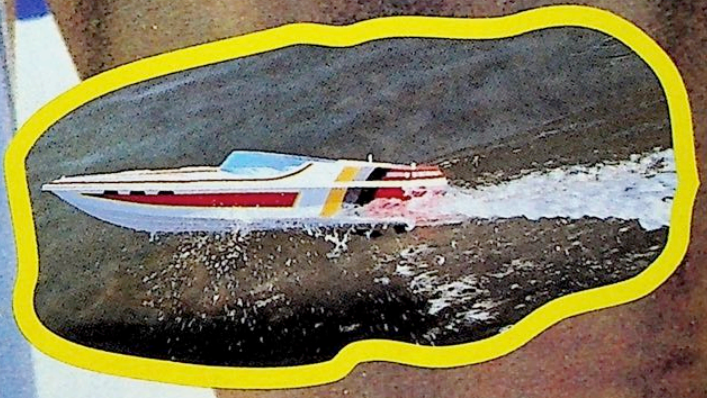
'HMS SHEFFIELD' FOR
RC COMBAT, PART 1

FEATURES:

FALL REGATTA

BIENNIAL EXHIBIT

TINA'S 'TURNER'



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VOLUME 4, NUMBER 14

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COVER: William "Irl" Whitten's East Coast 12-meter (EC12) 'Midnite Blue' drifts peacefully on the waters of a small lake in Birmingham, Alabama. MRC's Nordic Deep-Vee Turbo (top inset) is designed for fun/sport; see page 8. The steam tug (bottom inset) Shannon was one of many fine models on display at the Biennial Exhibition; see page 32.

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CAP'N'S LOG

BY BILL NORTHROP

DAGGER NEWS

The who-took-the-photo mystery still remains concerning the color pictures of the Jersey Dragger which we featured as a construction article in our Fall 1990 issue. In our Winter 1990 issue, we reported finding out that the model belonged to Roland Schaefer, of Milwaukee, Wisconsin. There was no doubt it was his, as the rounded stern on Roland's boat is contrary to the square stern of the original model and plans by Bob Nelson, originally published in *American Modeler,* May 1958.

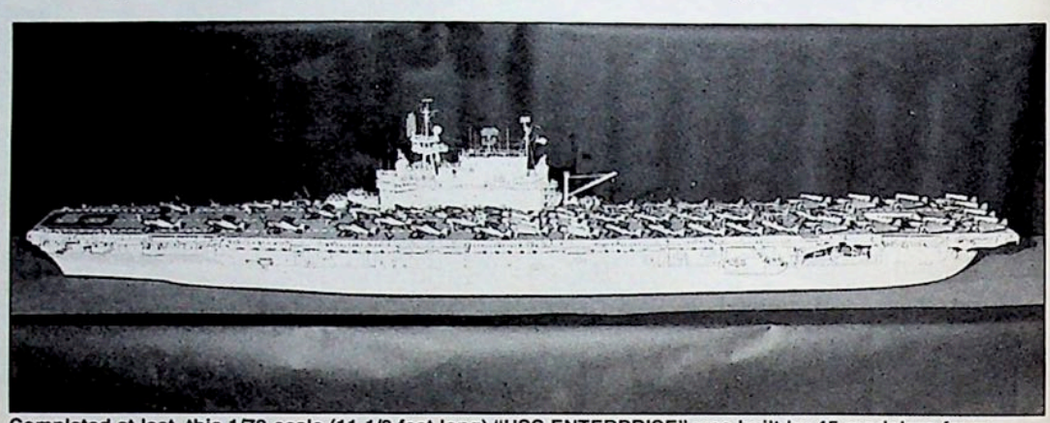
One photo in this issue shows a Dragger built by Mel Fortney, Alexandria, Virginia, soon after the original article appeared in 1958. Mel named the boat after his wife, "Sarah Ellen," and also named its home port as Deltaville, VA, a small boat building and fishing town on Chesapeake Bay.

Mel adds that his 12-meter RC sailing yacht still carries a set of sails made by Rod Carr, our "Strictly Sail" columnist, dating back to when they sailed together in the Washington, D.C. area.

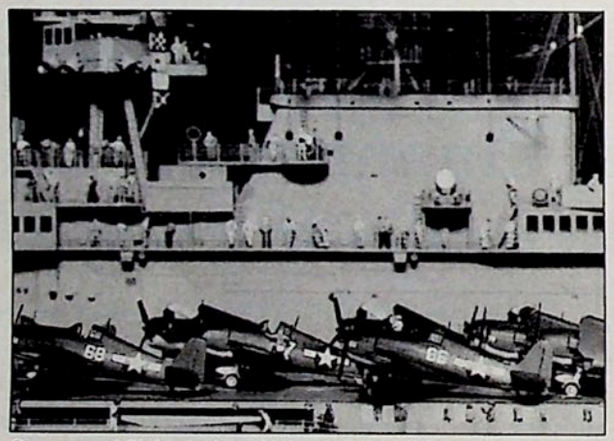
A most pleasant surprise at *USB&SM* was to receive a note from the original designer of the East Coast Dragger "Kingfisher" model, Bob Nelson, now residing in Jackson, New Jersey. Bob says his wife's aunt crocheted the fish net and he dipped it in coffee (no cream or sugar, we assume) to get the right color! Later, he went on to building bigger boats for their boating and water skiing pleasure, and from that he went on to the hobby of antique cars (Oh boy, don't get me started on that!).

ENTERPRISE COMPLETED

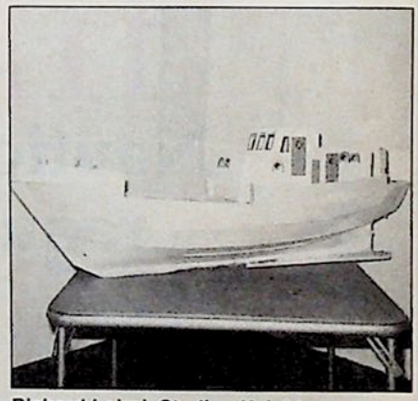
The USS Enterprise project for the EAA Air Adventure Museum in Oshkosh, Wisconsin, is finished, after two years of cooperative work by 45 modelers from six states. This project was the subject of an article by Scottie Dayton in our Fall 1990 issue, describing the work in progress and how it was all started and kept alive. The model, which at 1/72-scale is about 11-1/2 feet long, is now mounted in a large, plexiglass case that has filtered air continuously circulating, and an excellent overhead lighting system. The model is surrounded by display boards that, through text and photographs, tell the story of the Enterprise; the Enterprise Battle Record, Pearl Harbor, Halsey-Doolittle Tokyo Raid, Battle of Midway, Air Defense, On



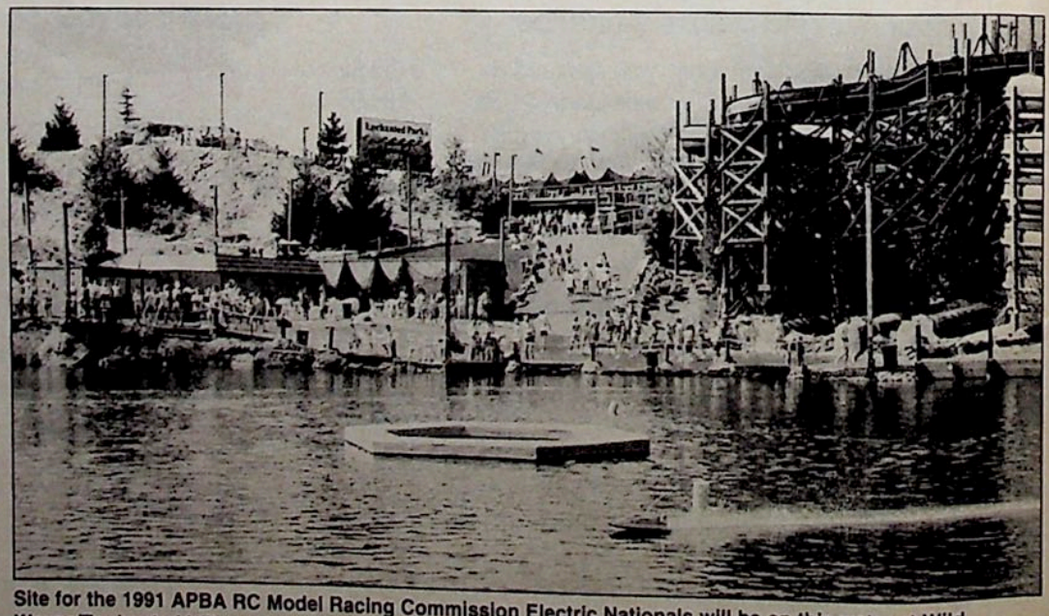
Completed at last, this 1/72-scale (11-1/2 feet long) "USS ENTERPRISE" was built by 45 modelers from six states for the EAA (Experimental Aircraft Association). For more information, see Scottie Dayton's article in our Fall 1990 issue.



Close-up of flight deck and island of the USS Enterprise, with Grumman F6-F "Hellcats" in the foreground. Project took two years to complete. It can be seen at the EAA Air Adventure Museum in Oshkosh, Wisconsin.



Richard Loizzi, Sterling Heights, Michigan, enlarged the plans we published in our Fall 1989 issue of this Kuter Ratowniczy R-33 from the Polish model magazine *Modelarz*. Hull length is 54 inches, and construction is marine plywood.

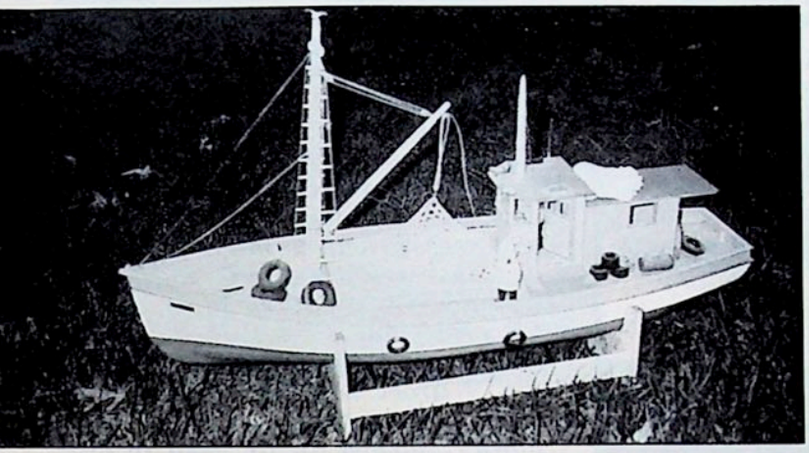


Site for the 1991 APBA RC Model Racing Commission Electric Nationals will be on this water at Wild Waves/Enchanted Village, near Seattle, Washington, July 6 and 7. More details in text.

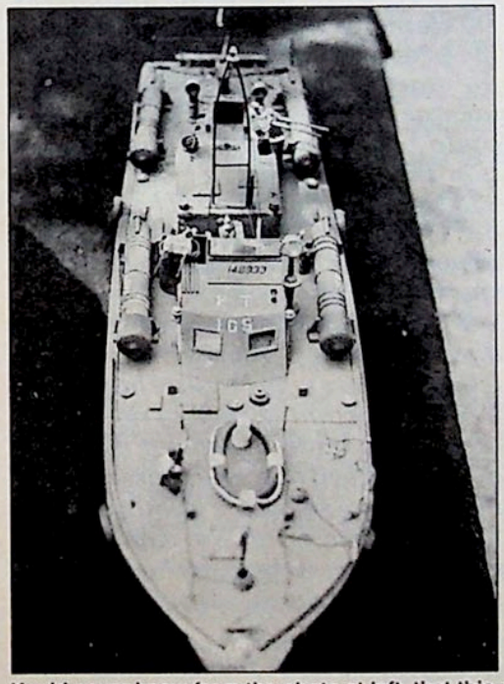
the Offensive, Final Victory, and Epilogue. We're hoping Scottie will come up with a concluding story on the project, complete with photos. The two photos herein are two of a four-photo set available from the EAA Air Adventure Museum, EAA Aviation Center, P.O. Box 3065, Oshkosh, WI 54903-3065. A set of four 5" by 7" is $10., and an 11" by 14" side view enlargement is $15.

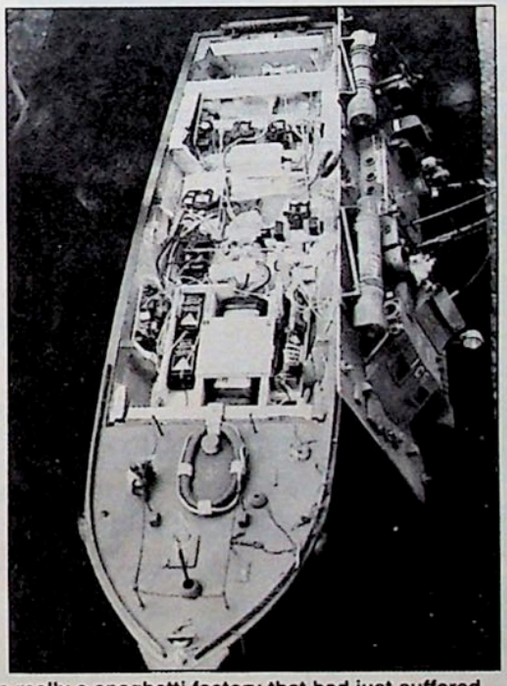
RC AND PLASTIC SCALE

Newcomers to modeling are often tempted to put radio control in plastic shelf models. Generally speaking, it's not a good idea because the models are usually too small to carry the necessary radio gear, the running hardware, the drive motor, and the batteries for the radio and motor. There are exceptions, however, as you can see in some of the photos in David Mainwaring's report on the Capital Marine Biennial Exposition, elsewhere in this issue. Another exception is the 1/350-scale DKM Bismark built from a Tamiya plastic kit by Mike Comeaux, Anchorage, Alaska. Note, however, that in Mike's case, and probably in the examples shown in Mainwaring's article, the boats were built by modelers with experience in RC installations. To quote Mike, "It took me about a month to finish it, as its cramped interior was conducive to a lot of RF interference! After I shielded the motor, the receiver, all the wires, and the electric speed controller, it was finally controllable. If anyone else does this, I strongly suggest buying good micro servos to save weight and space! . . . Being a long time RC enthusiast, I couldn't leave well enough alone, and soon added a RAM diesel sound generator and a 540 motor (the lagoon has a very strong current in places). With a six-cell pack, its run time was about 20 to 30 minutes at full throttle!"



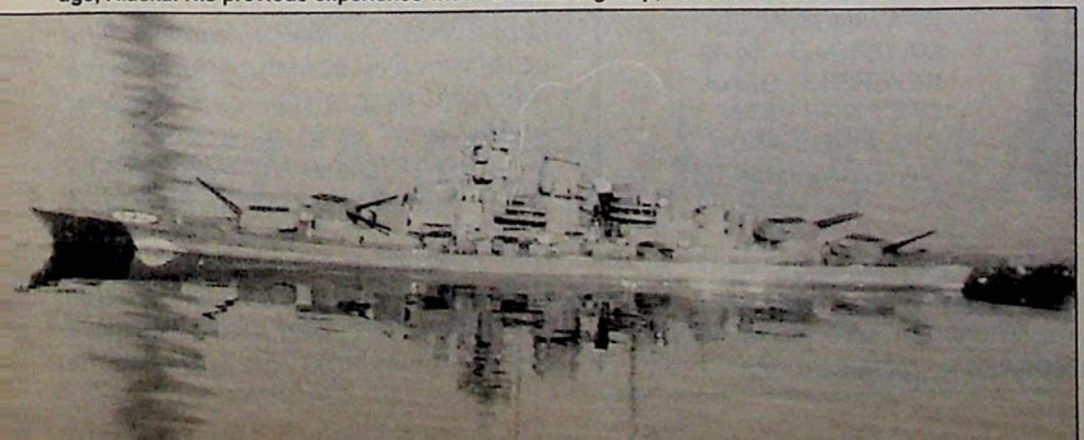
Jersey Dragger built back in 1958 by Mel Fortney, Alexandria, Virginia, from the original construction article, which we reproduced in our Fall 1990 issue. Model still operational, although with scale and radio equipment updates added in later years. More in text.





You'd never know from the photo at left, that this was really a spaghetti factory that had just suffered an explosion, see photo at right! Actually, it's Patrick Marcou's (Dallas, Texas) scratch-built PT-109, with one motor, all lights, siren and engine sound effect electronics from Robbe, and miscellaneous plumbing and PVC odds and ends. Looks longer than two feet, as specified in Patrick's letter.

This 1/350-scale Tamiya plastic "DKM Bismark" is the first RC ship built by Mike Comeaux, Anchorage, Alaska. His previous experience with RC was a big help, however. More details in text.



Mike has now spent four months at his computer CAD program, designing a 1/144-scale Bismark, with the intention of getting into RC warship combat. From reading reports in *USB&SM,* the figures the "Axis" is taking too many beatings, and intends to jump into the fray. If anyone is interested in obtaining a set of his Bismark plans, reach him at: 4100 Taft Drive, Anchorage, Alaska 99517.

HOW HIGH IS UP?

There's an age-old question that comes to us continually as the publisher of three hobby magazines, for which there is no easy answer . . . "Would this model be OK for a beginner?"

Wow! What a loaded question! Is this coming from the overstressed business executive whose doctor told him to get a hobby or start picking out his own coffin? Is it coming from a guy with ten thumbs? Is it from a youngster with attention span shorter than the time it took gas prices to rise after the Middle East hiccupped? Is this question coming from someone who has been building model airplanes for 20 years and is about to try his first model boat? It should be pretty obvious that there's no easy answer unless you've known the individual for quite some time.

We were asked this same question in a recent letter, concerning the Harbor Tug, which was published in our premier, Summer 1987 issue, and for which our plans are available, but our answer will be found here because the writer didn't send

us an S.A.S.E. (hint, hint), so we'll let him wait while we share it with all of you. Each person who is giving thought to tackling their first model project has to do some self-analyzing. Do you have experience? Do you have lots of patience, or are you looking for instant gratification? Can you make time available to work on the project? Most importantly, do you know someone close by who has model building experience and who will be willing to take you through the "dumb question" phase of getting off to a good start? There is no simple, indisputable, cut-and-dried answer to, "Is this model OK for a beginner."

And, how high is up? That's relatively easy. It's twice as far as half way!

BILL SAYS THANKS

This letter to the Editor from Bill Myers, Pocatello, Idaho, needs no further explanation.

I feel compelled to offer my wholehearted thanks to those with whom I came in contact at the 1990 APBA RC Boat Nationals. I sincerely hope you will allow your great magazine to be my forum.

You have the floor, Bill.

In my many years of sport and competition in both RC planes and cars, seldom have I seen as much eagerness to help a complete stranger as I have in RC boating. This kind of togetherness should be the standard for which others are judged.

As a relative newcomer to RC boating, I drove some 1600 miles into uncharted territory, inasmuch as I hadn't touched an RC boat in over eighteen years. That was until Jerry Dunlap graciously squeezed me into the program some four days prior to the start of the Nats. I really had no idea as to the state of RC boating. I could barely remember which direction the course ran, let alone who I was going to find to pit for me. All in all, I had a million and one questions to ask, and didn't know where to start.

Well, it didn't take long before those questions were patiently answered by fellow boaters who I'm sure had many more important things to do, and it didn't stop there. My motor was torn down, checked out, and reassembled, needles were set, boats launched, and most important, all the right advice given in order to keep my boats on the straight and true and out of everyone's way.

To name just a few; Paul Kitano, Jim Williamson, Dan Maher, Mark Grim, Ken Riley, and many more . . . you're not just faces in the crowd, willing to help out, but you're the backbone of the hobby! To take time out from your own tasks at hand and help a fellow boater (unknown), who could very well be hitting the starting line right next to you . . . you're true competitors.

Suffice it to say, there were many behind the scenes who seldom receive recognition for their efforts. Please find comfort in knowing that many little guys like myself do acknowledge your hard work, and are fully aware that without you, great events like the

continued on page 27

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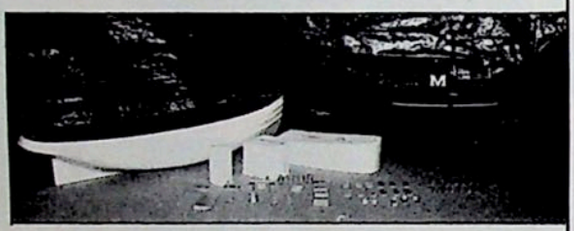

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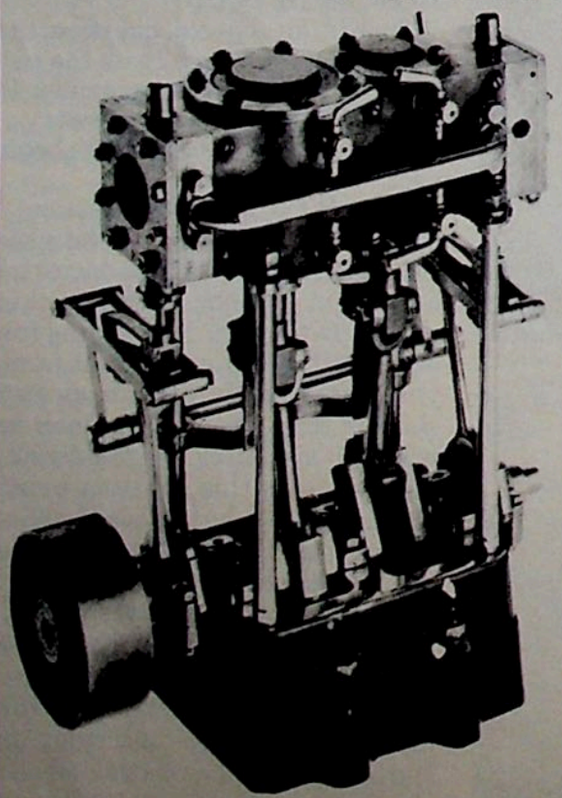

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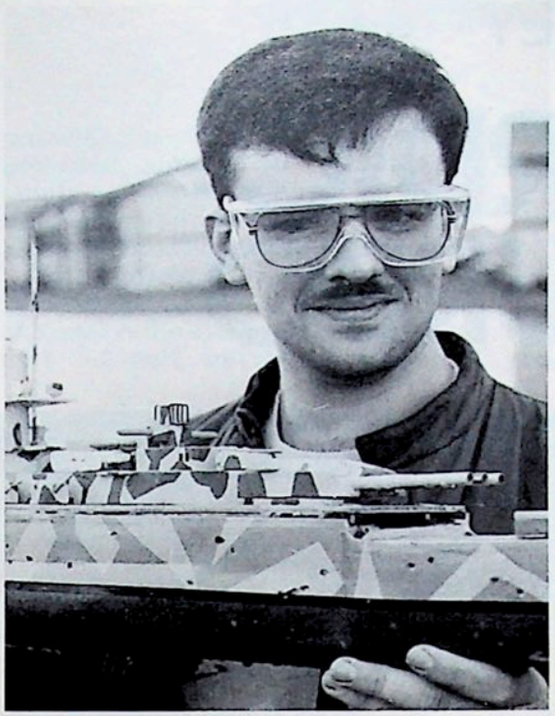

This battlers model of the DKM Lutzow has just been sunk! Don't worry about the BB holes in the hull, they were all given permanent repairs in just a few minutes time.

Have You

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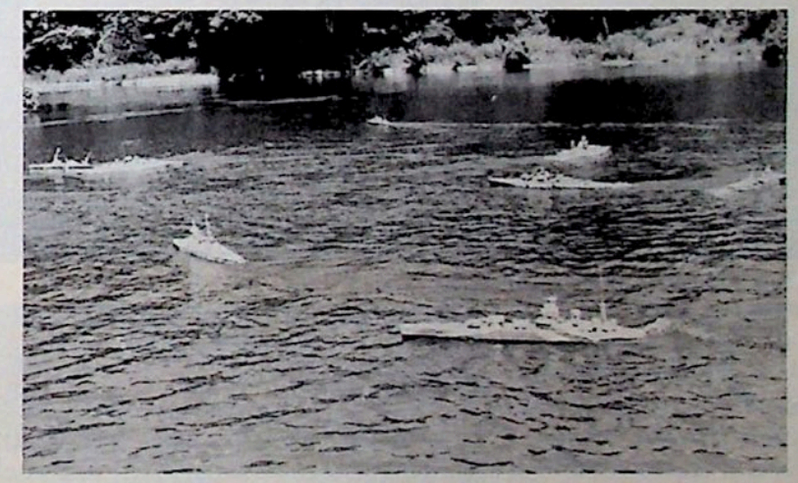

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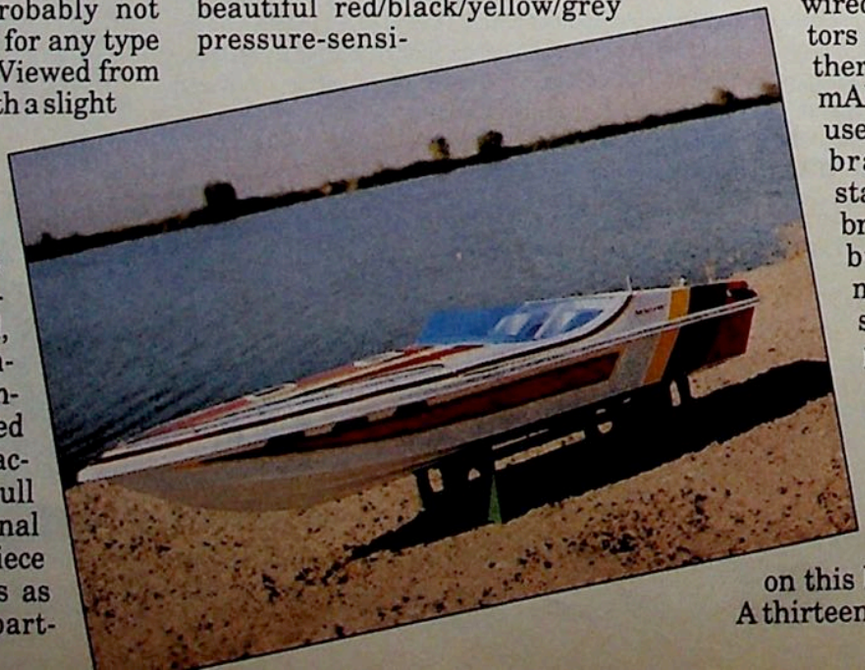
MRC's NORDIC DEEP VEE TURBO

BY SKIP RUFF

One of the newer entries into the world of ARF electric powered boats, as of this writing, is Model Rectifier Corporation's Nordic Deep Vee. Priced at the lower end of the electric boat scale, it is intended as a fun/sport machine and probably not (without modifications) for any type of serious competition. Viewed from that perspective, and with a slight modification, the machine performs its role well.

The kit comes with the top and bottom ABS plastic hull halves already joined and sealed, providing, for all reasonable purposes, a tough unsinkable boat. Threaded brass inserts are also factory installed in the hull for securing the internal components. Another piece of formed ABS doubles as the radio/motor compartment hatch and cockpit. It is retained by a single thumbscrew and velcro strips.

Small styrene plastic parts such as the chromed hand rails and black steering wheel are included for increased realism, as well as a set of beautiful red/black/yellow/grey pressure-sensitive vinyl decals that provide for a very attractive model without the need for any painting.



For motivation, a 540 size motor with a finned aluminum heat sink is supplied, along with a resistor-type speed control, with reverse, that is wired to two Tamiya connectors in parallel, allowing either one or two six-cell 1200 mAH battery packs to be used. Helical cut 1.9 to 1 brass reduction gears, stainless steel driveshaft, brass stuffing tube, oillight bushed plastic motor mount and drive shaft support and a two-bladed plastic prop round out the rest of the drive system. Regarding the motor mount, it is designed for the addition of a second motor if more power is desired. More on this later.

A thirteen-page construction man-

ual with line drawing illustrations is provided, along with various other small parts and bits, such as nuts and bolts, allen wrenches, pushrods, clevises, mounting brackets, etc.

To complete your model to float-and-run status you will need a two-channel radio system, one or two six-cell 7.2-volt battery packs and charger, some CA and epoxy glue, and a few common modeling tools.

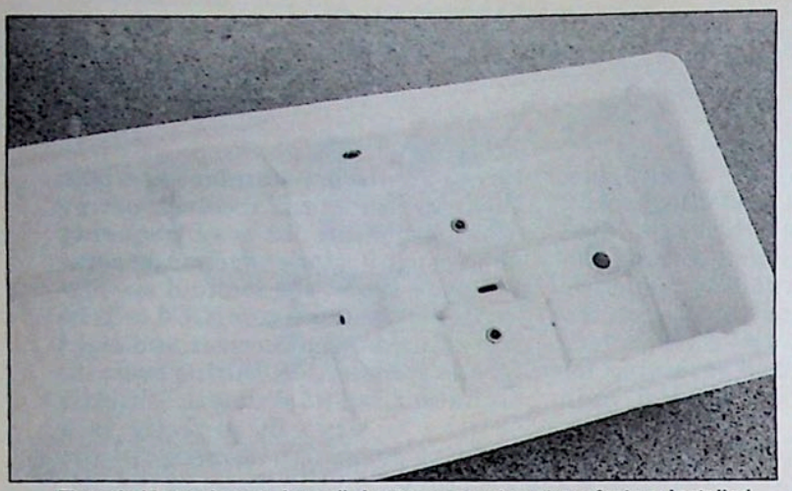
For the purposes of this test MRC provided its 2S-75 (surface use) two-stick, two-channel radio for guidance. The transmitter has throttle on the left and rudder on the right, a battery meter, and servo reversing for both channels. Two 1D-110 high torque servos are standard and both the transmitter and receiver feature plug-in crystals for easy frequency change. No batteries or charger come with the radio, the manual specifying that AA alkaline or NiCd cells be used, four for the receiver and eight for the transmitter. During radio installation, I noticed that the throttle servo fit perfectly in a molded-in recess in the hull, so I imagine the boat was more or less designed with this radio in mind, although other systems can certainly be used with no problem.

Photos showing location of decals and small plastic parts. Note: Stand is not included in kit.

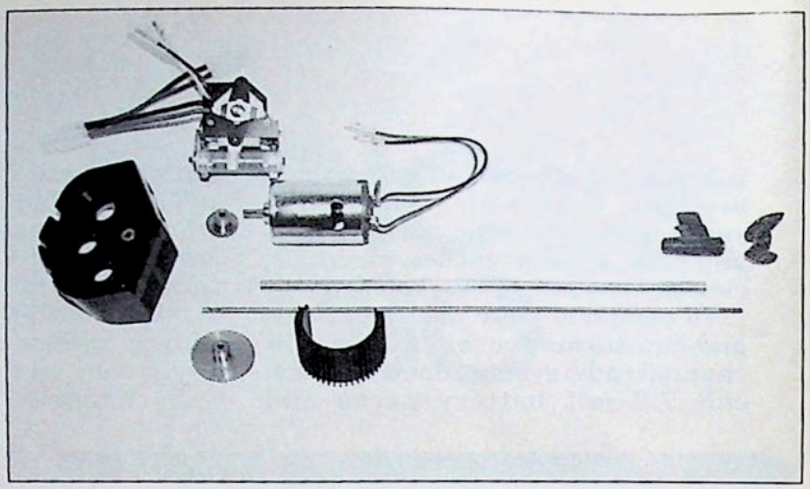
Although the instructions are sparse, at best, I had little difficulty putting this machine together, and this is the first RC boat I've ever had! The following related problems or suggestions are not meant as criticism but are to assist any readers contemplating purchasing one of these units. Please refer to the accompanying photos in this article.

I couldn't find any indication in the instructions for proper placement of the motor battery pack(s) so I contacted MRC. I was informed that one battery is to be located under the switch mounting bracket and the other just forward of it, when using two packs. When using one pack, it can be placed in either location. I bought some adhesive-backed velcro to secure the packs in place. I had to modify the switch mounting bracket with much tighter bends at the ends to allow a standard six-cell 1200 pack to slide underneath. As the compartment hatch is secured to this bracket, the bracket should be re-bent before the necessary holes are cut into the hatch for the on/off switch and thumbscrew.

The instructions were just a little unclear as to



Threaded brass inserts for radio/motor compartment are factory installed.



Drive system components.

where some of the decals and small plastic parts were to be attached. Hopefully, the photos shown here will help.

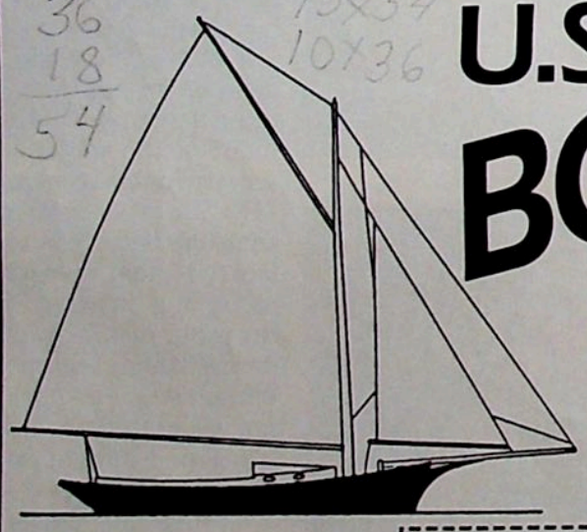
Overall I found the parts fit to be excellent and the model went together rapidly. In fact, applying the decals and small plastic pieces seemed to consume the majority of the construction time.

The windshield provided is clear plastic with thin blue vinyl protection film on both sides that is supposed to be removed. I left the film on one side because I liked the tinted appearance and so far it gives no indication of wanting to peel off by itself.

Completed, the model (minus motor batteries) weighs three pounds. The length is 29 inches, with a beam of 7-1/2 inches.

I was a bit dismayed to find no fuse installed anywhere in the speed control system and recommend that some sort of current protection be provided. I've already fouled the prop twice on floating "baggies," but quick retarding of the throttle prevented any problems. Whether a stalled motor would actually burn up anything is unknown, but I don't intend to find out!

Running the Nordic proved to be pure joy, even for this airplane enthusiast. I have no doubt that I could really get hooked on this sport. The boat is easy to run and even though it has an estimated top speed of only



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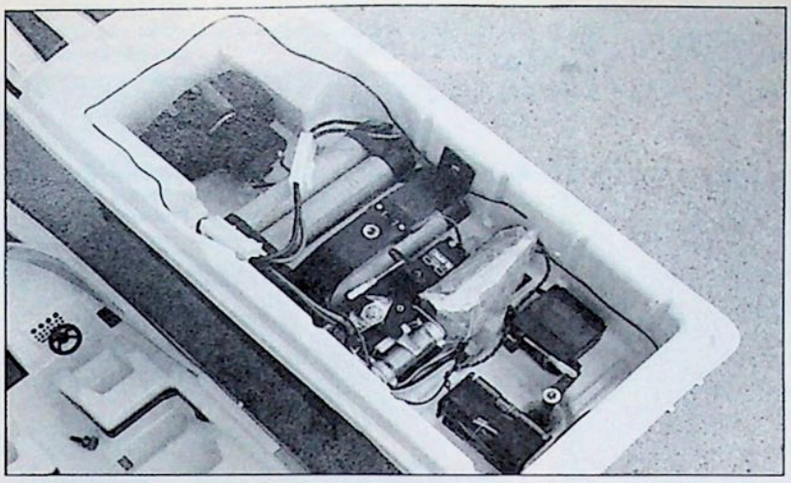
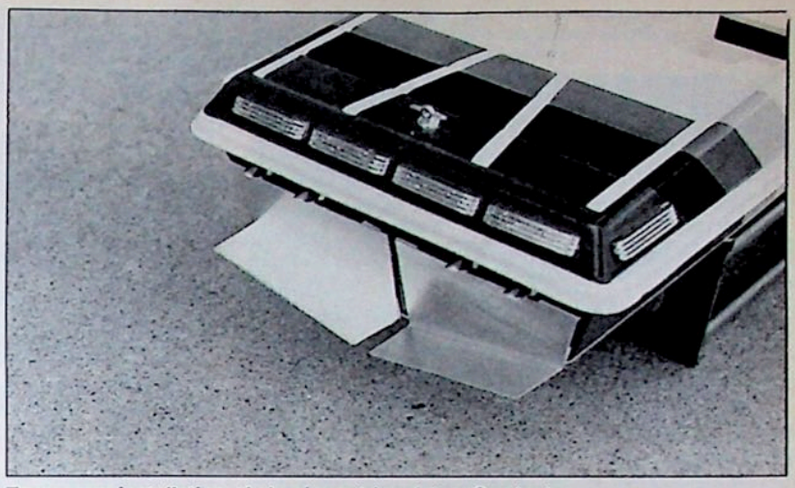


Radio/motor compartment with all equipment installed. Note two 6-cell motor batteries and their location. Note also protective "baggie" around receiver.



Temporary installation of aluminum trim plates. See text.

10-12 mph, this does not appear slow and is certainly fast enough for a lot of fun. Run time was around seven minutes with a single battery and double that with two packs. Trim for straight line running required several degrees of left rudder, probably due to torque and prop wash (if that's the correct nautical term) over the rudder.

I did notice a couple of quirks that I feel I should mention. At top speed the boat tended to porpoise somewhat and though it is very maneuverable, I found that, at speed, application of full left rudder (but not right) would cause the bow of the boat to suddenly drop and the turn rate to decrease dramatically. Not having any idea of what was causing this, I decided to check with an expert for a solution and gave Jerry Dunlap a call. He thought that possibly trim plates attached to the transom, flush with the bottom and extending back about one inch, might cure the porpoising. I made a set out of .016 inch aluminum and stuck them on with servo tape for a temporary experiment. Jerry evidently knows his stuff, as not only was the porpoising gone, so was the left turn anomaly, with the boat now able to turn sharply in either direction at full speed.

As mentioned earlier, a second motor can be added to the drive system for more performance and the necessary pieces were supplied to me to test this option. For a couple of reasons, I do not recommend it at this time. First of all, I could honestly detect very little difference in speed. Secondly, adding the second motor requires that both motors be placed in a lower position in the hull. After running the boat in this configuration for awhile I began to have very erratic throttle response with the motors completely stopping, occasionally, for a minute or so. I'm not completely sure, but I suspect what was happening was that water leaking past the top hatch (which is not watertight) when the boat was in motion, was finally accumulating enough in the radio/motor compartment to allow it to get into the armature/brush areas of the motors and short them out. Draining the water out always cured the problem until the boat had been run again for a few minutes and more water had accumulated. I believe I didn't have this problem when running a single motor, because the motor, in that configuration, is mounted higher in the hull and is able to stay out of the trapped water until the batteries expire, at which time they are removed for recharging and the water is drained out. It is my understanding that MRC is revamping its twin motor option for the future so I feel confident that whether my analysis is correct or not, whatever is causing the problem will be corrected.

MRC has no suggested price for the boat or radio, that is left up to the retailer. I have seen the boat/radio combo (they are available separately) offered along with a battery and charger for under $200 in a toy store, so I guess that is a good ballpark figure. It may pay to shop around a bit for the best price.

In summing up, I found the Nordic Deep Vee, when run with a single motor and the addition of a trim plate (a very minor modification) to be lots of fun, and hopefully you will, too! •

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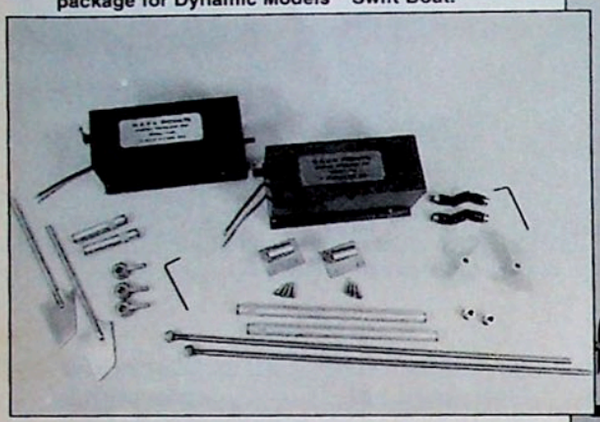
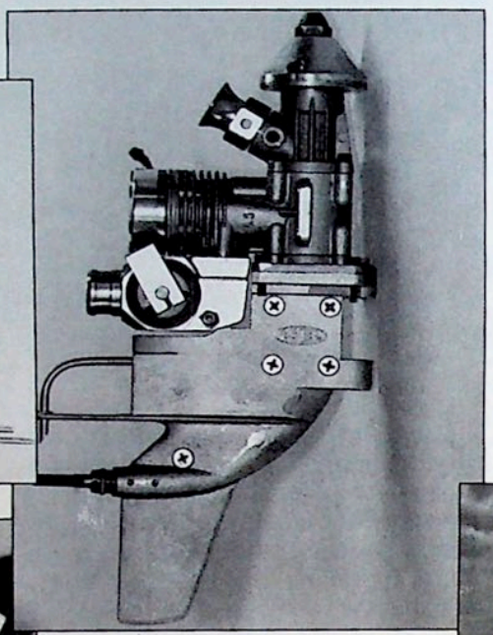
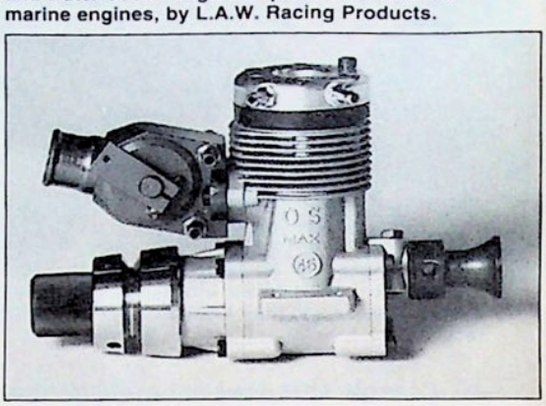
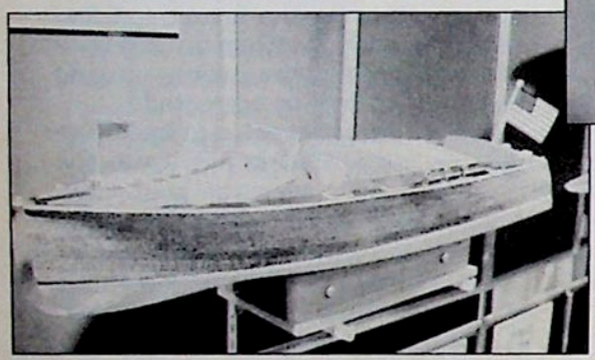
M.A.C.K. Products' complete running hardware package for Dynamic Models' "Swift Boat."



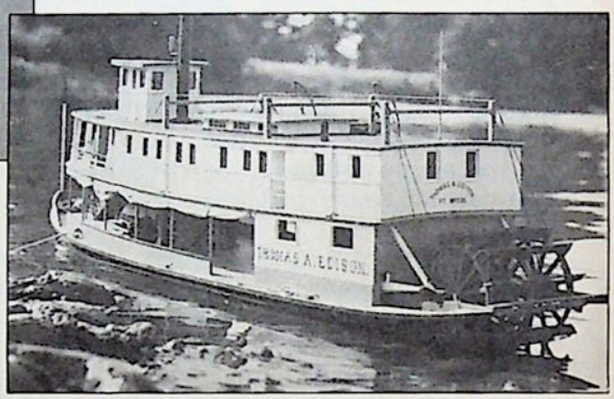


(Left and below) Exhaust throttles, velocity stacks, and water-cooled high compression heads for marine engines, by L.A.W. Racing Products.





Yet-to-be announced classic runabout kit from Dumas Products, Inc.



"Thomas A. Edison" stern paddlewheeler built from John L. Fryant plans.

M.A.C.K. Products Model Marine, P.O. Box 464, Long Branch, NJ 07740, phone (908) 870-2966, is now producing a complete twin-engine, high performance, custom designed running hardware and power package for the Dynamic Models' "Swift Boat" kit #137. (An extended survey of the Dynamic Models "Swift Boat" was featured in the Spring 1990 issue of *U.S. Boat & Ship Modeler*).

The custom hardware package contains all-brass propeller shaft and rudder post stuffing boxes, complete with Oilite bearings and "O" ring seals; precision ground stainless steel propeller shafts; all-brass struts with Oilite bearings; welded and polished stainless steel rudders; rudder tiller arms; propeller drive dogs; propellers (left and right); stainless steel prop nuts; and precision, double-joint universals.

Also included in the package are two M.A.C.K. electric propulsion units, Model #1200. Each unit has its own built-in proportional speed control (both in forward and reverse), a #5045 Model Marine motor (rated at .20), and gear box (2.3 to 1 reduction). With this system, the modeler will have independent control of each engine, just like the real thing.

For further information and a complete catalog of M.A.C.K. Products Model Marine, send $2.00 to the above address.

• • •

L.A.W. Racing Products, 1229 Capitol Dr., Addison, IL 60101, phone (708) 435-2030, Fax (708) 543-6871, a division of Lanute Machine and Tool, Inc. has introduced a line of high performance marine engine accessories. Featured in this announcement are the high performance compression heads, which increase compression and rpm's; the velocity stacks, and the exhaust throttles, both of which combine to give instantaneous throttle response that eliminates butterfly lag time. These simple to add on parts are manufactured on high-tech computerized machining centers, guaranteeing high quality, consistent reproducibility with close tolerances. If you don't find these items at your local hobby shop, contact the company direct and tell them you read about them in *USB&SM*.

• • •

Another go-faster item is now also available for modelers of gas-powered RC raceboats. Keeley's Custom Motor Works, 2677 Credit Valley Rd., Mississauga, Ontario, Canada L5M 4J8, phone (416) 828-0138, has introduced a new line of high performance connecting rods. Each Titan Rod is CNC machined from aircraft grade titanium alloy and is virtually indestructible. These rods feature extremely high tensile strength with light weight, a thin cross section area for lower aerodynamic drag, and are available with either needle bearing or phosphor bronze bushed bottom end. Each rod is guaranteed for one year against bending or breaking.

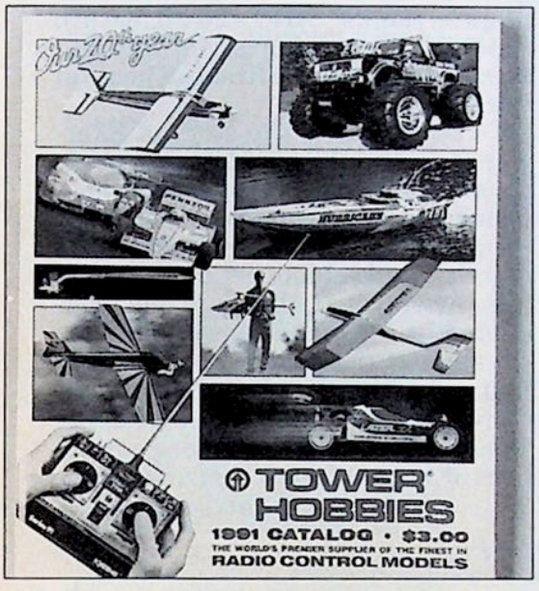
Rods are available for: REX 21, OPS 45, 60, 67, 80, Picco 45, 60, 67, 80, Hydro 90, Rossi 21, 60, 65, 80, 90, K&B/KBV 7.5, 67, 72, 82, and OS 91.

For more information, contact Keeley's in Canada, or Speedmaster Model Products, 1325 Carol Dr., Memphis, TN 38116, phone (901) 396-7485.

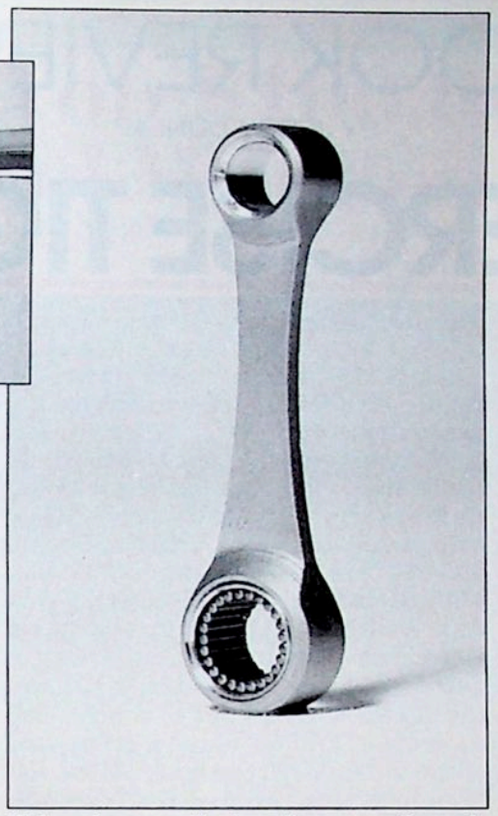
• • •

The beautiful, natural-finished mahogany planked, inboard runabouts of yesteryear are making a comeback in full-size boating, so it is only natural to expect to see these

Model 207 Hi-Rate Electronic speed control from Astro Flight Inc.

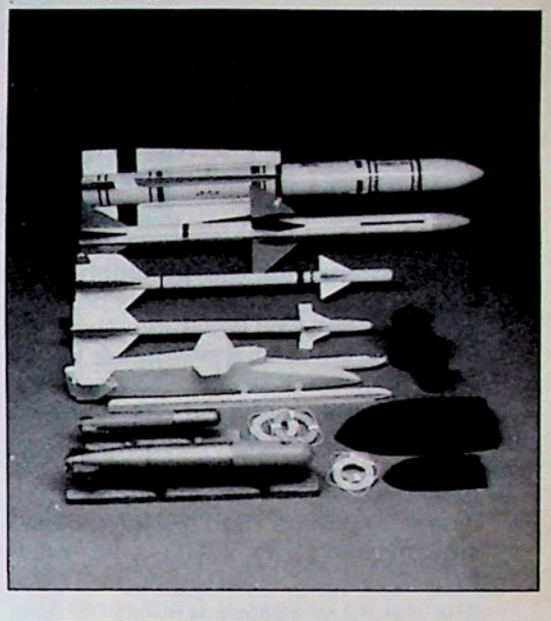


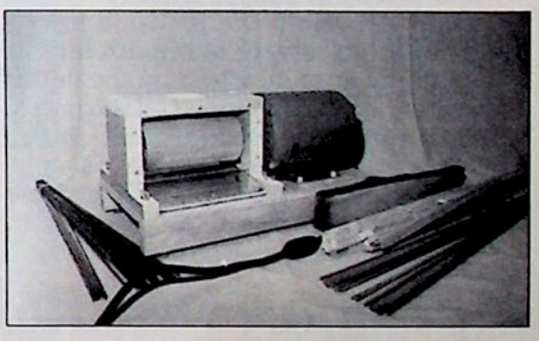
Tower Hobbies' 1991 Catalog.



High performance titanium alloy connecting rod, from Keeley's Custom Motor Works, for many current racing engines.

Scale accessory parts for boat and airplane models, by Eagle Miniatures Inc.





Wood thickness sander by Model Ship Marina.

classics appear in model form. In fact, it was almost no surprise to see a model of this type on display in the Dumas Products booth at a trade show near the end of last year. Although we have not yet received an official release from the company regarding production of a kit, we feel it's safe to predict that it will be coming soon. The model, as we recall, is about 30 to 36 inches long, with plenty of room for radio and power installations (plus nice rumbling, engine sound electronics), and will no doubt be a very popular kit among scale boaters. For more information about this mahogany runabout, contact Dumas Products, Inc. at 909-US E. 17th St., Tucson, AZ 85719, phone (602) 623-3742, Fax (602) 620-1329.

• • •

In a recent note from John L. Fryant, 6508 Dorset Dr., Alexandria, VA 22310, we learn that his Paddlewheeler Plans Service riverboat plans catalog has sold out. He is currently expanding the plans service to include tugs and workboats. Additional plans are on the drawing board. They will include vintage river towboats, harbor type tugs, and more steam powered paddlewheelers. A new, expanded catalog and handbook for riverboat modelers is in the works.

During the interim, John is offering a FREE illustrated three-page listing of currently available plans to anyone sending him a legal sized S.A.S.E. (by the time you see this, that stamp will probably cost 29 cents). Note that there are three new listings not appearing in the out-of-print catalog. We have John's plans for the Thomas A. Edison sternwheeler. They are very well done and clearly drawn, to a scale of 1/4" = 1'.

• • •

You'll see a lot of editorial space in this issue devoted to the rapid progress now being made in "fast electric," the popular two-word description of the new wave of high-speed electric RC racing boats. In the midst of all this excitement in RC boat racing is the company that is supplying the electric motors that are powering nearly all of the record-setting class boats, Astro Flight Inc., 13311 Beach Ave., Marina Del Rey, CA 90292, phone (213) 821-6242.

If the name is new to you, and the term "Flight" seems out of place, it's because the company has been a pioneer in the development of electric motors and speed controls for RC model aircraft practically from the beginning of electric powered flight, and has also been involved in full-scale electric powered flight. Those years of experience have made it possible to jump into electric model boat power in the last year or so as if it had been there all along, and that can mean a lot to model boaters who want to use electric power in their models, for fast electric or scale electric.

The latest item coming from Astro Flight for "fast electric" model boaters is the Model 207 Hi-Rate Electronic Speed Control. It has optocoupling, which prevents conducted motor noise from glitching the radio

continued on page 27

All material published in *SHIP'S STORE* is quoted or paraphrased from press releases, furnished by the manufacturer and/or their advertising agencies, unless otherwise specified. The review and/or description of any product by *USB&SM* does not constitute an endorsement of that product, nor any any assurance as to its safety or performance.

BOOK REVIEW

BY JERRY DUNLAP

EXERCISE TIGER

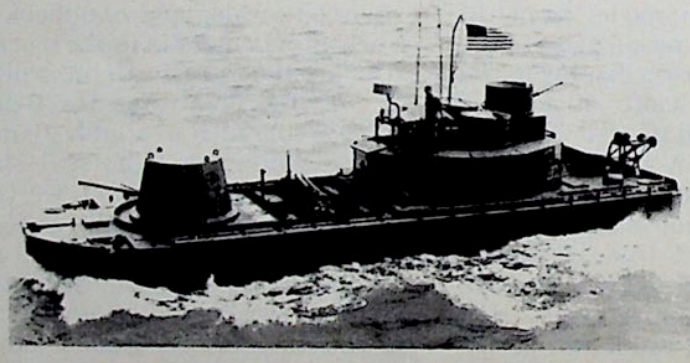
The ships of the invasion force heading for Normandy on June 6, 1944, did not have to be reminded that the English Channel was not a safe place to be. There were mines, U-boats, and hostile aircraft to think of. Some of the ship captains also knew that an invasion rehearsal in the channel a few weeks before had been savaged by E-boats, sinking two LSTs with a staggering loss of life. The incident had been hushed up to keep it from spreading doubts through the invasion forces. The sinkings were to remain hidden from the outside world by the veil of secrecy that surrounded all the preparations for the great assault on Europe. So vast was the epic of the D-Day invasion that the loss of those ships became a small, tragic footnote. It was a footnote that would remain hidden for reasons of security, for reasons of inter-Allied relations, and in no small part because it involved a chain of embarrassing screw-ups.

Of course, it could not be a footnote to the men who experienced it or the families who lost loved ones in those cold, English waters. Their suffering was real and their memories of it live with them and remain strong to this day. When Nigel Lewis began researching the incident he found a network of survivors on both sides of the Atlantic who kept in touch with each other and provided a great deal of the material in the book. Although they had been ordered never to talk about the incident, they carried the story with them through their lives and over the decades have tried to assemble as much as they can about the events. Their story has shown up in articles and in two television documentaries; "Sands of Silence" (TVS 1/12/84), and "The Tragic Secret of Slapton Sands" (ABC's 20/20 feature of 5/3/84). Their efforts continue and *Exercise Tiger* is the first full book on the subject.

To do justice to the story of Exercise Tiger, Mr. Lewis had to set aside the assumption that the reader knows about the preparations for D-Day. Preparations are never a glamorous activity, and seldom get much coverage, even when they are not conducted under strict secrecy. Tiger is set against the backdrop of an English countryside thrown into upheaval by vast armies and crushing stockpiles of material. Large numbers of young American troops were

continued on page 64

From the brown water of Vietnam to the white caps of the North Atlantic...



Monitor
1/16 scale
Semi-kit Includes:
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Dyn #141

Smit Rotterdam
1/48 scale
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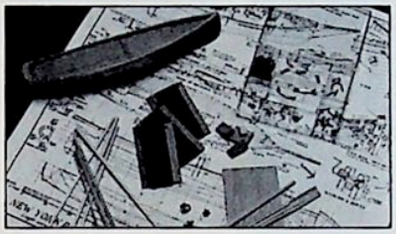
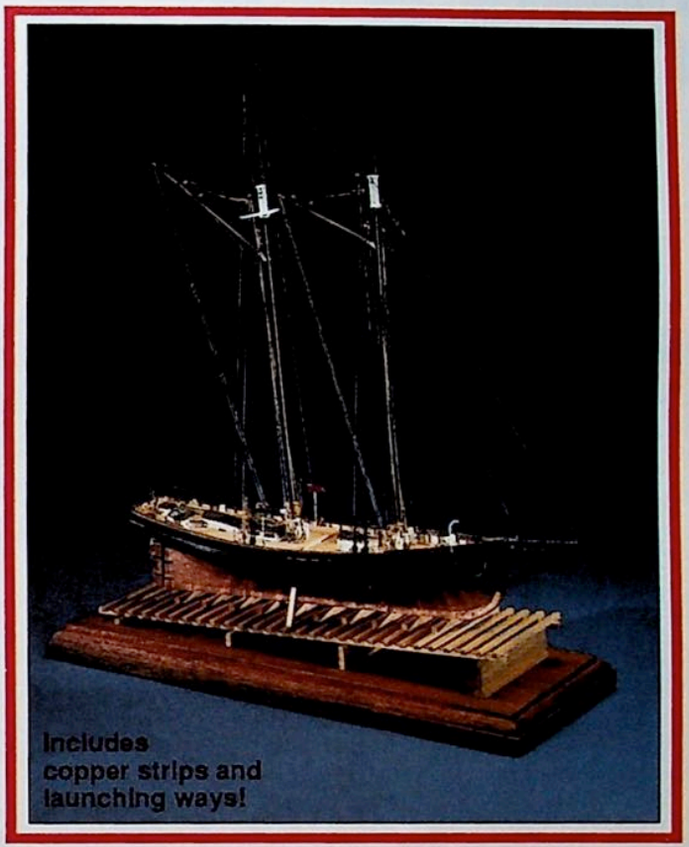


We designed our kit especially for the first time modeler. We include everything you need to build the model as shown. The solid basswood hull is precarved, so you won't have to do any shaping. You'll get wood parts for the cabin and companionways, ready-to-use wooden blocks and deadeyes, solid brass and finely cast metal fittings, three sizes of cotton rigging line, plus genuine copper strips to cover the hull. Hardwood display base and launching ways complete the kit. Full scale authentic plans and clear, easy-to-follow instructions guide you through every phase of assembly. The result? A magnificent, museum quality ship model you can display with pride. Or take us up on our special "buy-back" offer for a *guaranteed* profit.



Phantom by Model Shipways, makers of fine ship model kits since 1946. Length 13-1/2"/Height 13-1/2"/Scale 1/8" = 1 ft.

The Phantom was built for the Port of New York Pilots in 1868. She was lost during the great blizzard of '88, going ashore at Sandy Hook, NJ. Two years earlier on March 14, 1886, she rescued 852 people from the sinking British liner S.S. Oregon off the Long Island coast. The plans in our kit are a faithful adaptation of the originals.

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Our Buy-Back Guarantee

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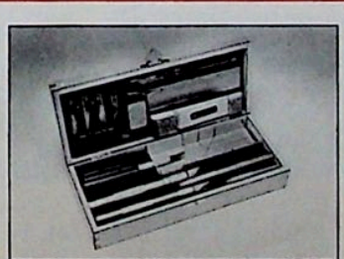

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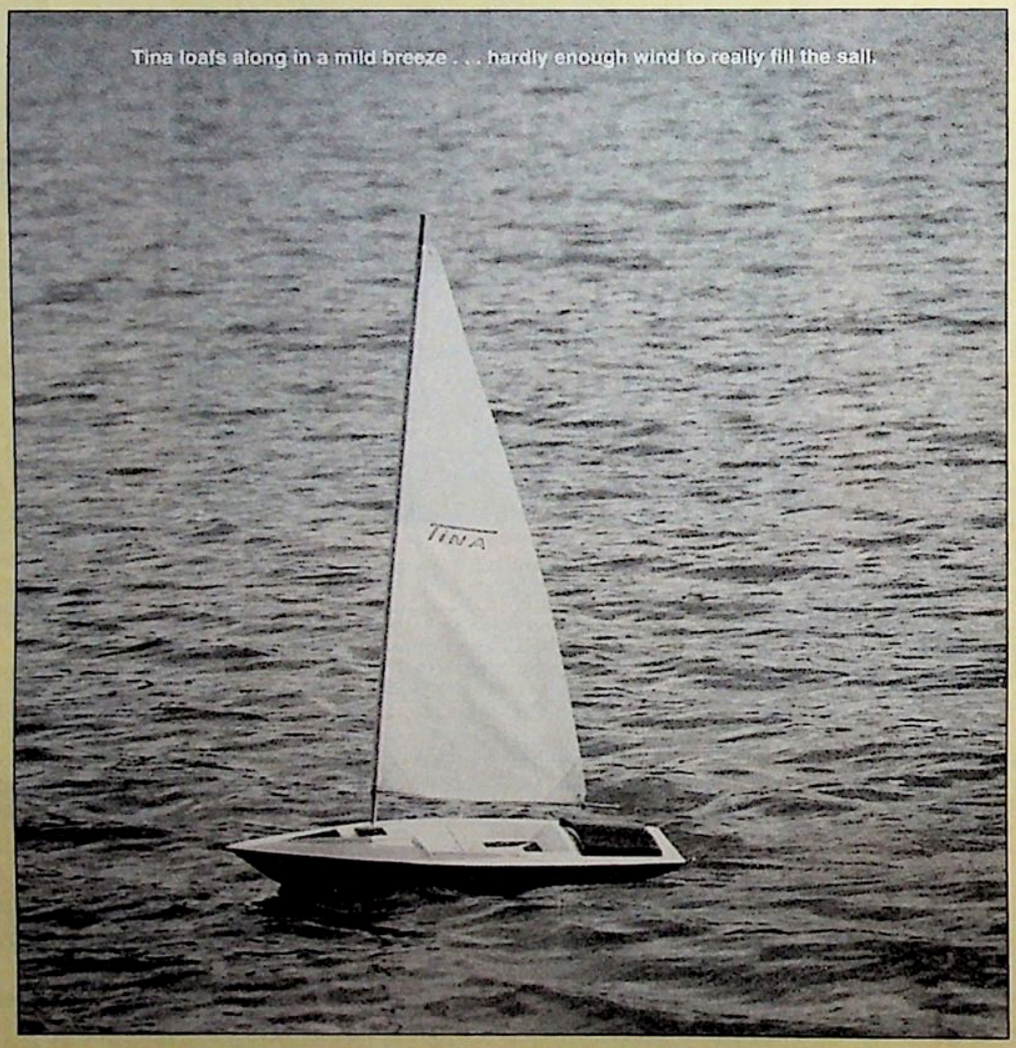
HOBBY LOBBY/KRICK 'TINA'

BY WILLIAM WHITTEN



Tina loafs along in a mild breeze . . . hardly enough wind to really fill the sail.

Hobby Lobby International is one of the country's largest mail order hobby suppliers. They specialize in importing kits and hardware from Germany and carry an extensive line of model boat kits, both electric powered and sailboats. TINA is the smaller of two sailboats in their current catalog and is made by Klaus Krick Modelltechnik. She is a simple yet elegant catrigged sailing dinghy designed for one or two-channel RC. TINA is 35.5 inches long with an 11 inch beam, stands 62 inches high and weighs about 7.5 pounds.

TINA is the boat for the RC plane or powerboat enthusiast who would like to try sailing without sinking a lot of time and cash in a more sophisticated model yacht. There is no complicated rigging . . . just step the mast, connect one line and sail. She's just the thing for those days when it's too windy to go flying!

This model is made almost entirely

of ABS plastic, except for the rotating aluminum mast and the nylon sail. The kit even contains steel shot ballast and a generous bottle of UHU cement plus hardware and a nice set of red and white decals.

CONSTRUCTION

TINA is not a difficult kit to build but neither is it a "buy today and sail tomorrow" model. The ABS plastic is easy to work with and finish, with enough effort to keep the model builders happy. Most of this is in trimming the excess ABS from the vacuum formed hull, deck and other parts. The English instructions are well done, with diagrams for each step. All dimensions are metric so you will have to use that system or convert them to English.

No real difficulties were encountered with construction. The ABS parts were nicely molded and fit well. The die cutting of the plywood parts could have been better but a bit of sanding cleaned up the rough edges. The instructions called for the use of Stabilit Express adhesive in several places. I didn't have any on hand and used a methyl methacrylate plastic bonder from Radio Shack. I also used Oatey PVC/ABS plastic cement from the hardware store for some of the ABS to ABS joints instead of the UHU Hart in the kit. The UHU Hart and Stabilit Express are both available from Hobby Lobby and are included in their accessory packs for this model. It's probably worthwhile to use them. You will also need a boat stand or cradle. I "borrowed" one from one of my other sailboats.

The mast and boom assembly took a bit of effort to assemble. The brass inserts were a very tight fit . . . it's for sure they won't ever come loose! I deviated from the instructions a bit in rigging . . . a rubber grommet from Radio Shack was used on the end of the boom to attach the sail instead of line and a bowsie as shown on the diagram.

I also made a few additions to the hull and deck assembly. I glued a length of plastic tubing under the deck to hold the receiver antenna. Some radios don't like this, but my 11-year-old Kraft doesn't seem to mind. I also glued a piece of split rubber tubing around the edge of the deck/hull flange to give the joint a more finished look.

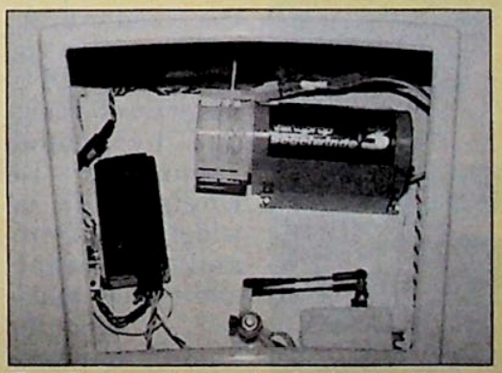
I elected to use lead for the ballast rather than the steel shot in the kit. An equal weight of lead shot will help get the center of gravity down lower and make the boat less "tippy" and the lead won't rust if it gets wet. As the lead takes less space than the steel shot, there is room to add more later if desired.

FINISHING

It really isn't necessary to paint TINA, as just the red decals on the white ABS would look OK, but I had a couple of cans of blue Black Baron spray epoxy left over from an EC12, so that's what I used. A bit of sanding on the ABS hull and hatch cover to break the shiny surface and the epoxy went on just fine. Additional trim on the deck was cut from Trim MonoKote and the kit decals were placed on the hull.

RADIO AND SAIL WINCH

TINA can be sailed with just rudder control but in anything more than light wind a sail winch is almost a must. There are several suitable winches on the market, including the Airtronics shown in the kit's instruction booklet. Hobby Lobby recommends the Graupner SEGELWINDE drum winch. They also offer the Futaba 525 for sailing in light winds.



(Top) Tina out of water, showing keel, rudder, and hull shapes. Note total lack of fore, aft, and side stays. Makes for easy rigging at sailing site, and convenient transporting. (Above) Roomy, uncluttered RC compartment; receiver and switch at left, Graupner sailwinch servo at top right, and rudder servo and linkage to tiller at bottom right. What could be simpler?

This was my first experience with a drum winch and I was impressed by the high quality of the Graupner SEGELWINDE. It is lightweight, powerful, and fully proportional, and comes with full instructions and three drums to fit almost any size boat. It should easily handle several times TINA's sail area.

The SEGELWINDE comes with a connector to fit JR radios and a separate plug to go to a 4-9 volt battery pack. I soldered a new pigtail to the PC board to fit my Kraft radio and put a Deans plug on the battery connection. Rather than use a separate battery pack for the winch, I rigged up a second connector on the receiver pack.

TINA's large rear hatch opening made radio installation easy. The sail winch was attached to the plywood floor with four sheet metal screws. The rudder servo was mounted using double-sided foam tape and the receiver was attached with Velcro. The battery pack was placed just forward of the plywood floor, again using Velcro. I replaced the steering arm, as the one provided would not tighten securely, and also replaced the line with braided Dacron. Hobby Lobby encloses a special instruction sheet on the drum winch which shows how to avoid line back lashes. The SEGELWINDE has internal throw adjustment pots which made setup easy.

SAILING

This boat likes wind! Lots of wind . . . in fact the catalog says TINA will actually plane if the wind is high enough. With her movable keel and modest sail area, TINA will sail in winds that keep many other boats on the shore. TINA's smallish sail is also her one major fault. It is fine in heavy air, but when the wind is light, TINA needs considerably more than her 360-odd square inches of sail area. Most boats of similar size in this country carry about 600 square inches. They must have a lot of wind in Germany!

There is no reason that TINA can't be fitted with a second and larger sail rig for light winds. I did just that . . . a British style "swing rig" was borrowed from another boat and fit right in place of TINA's rotating cat rig. This proved to be an excellent combination . . . light air became just as much fun as sailing in a stiff breeze. A conventional rig could also be used but it would entail a lot more work.

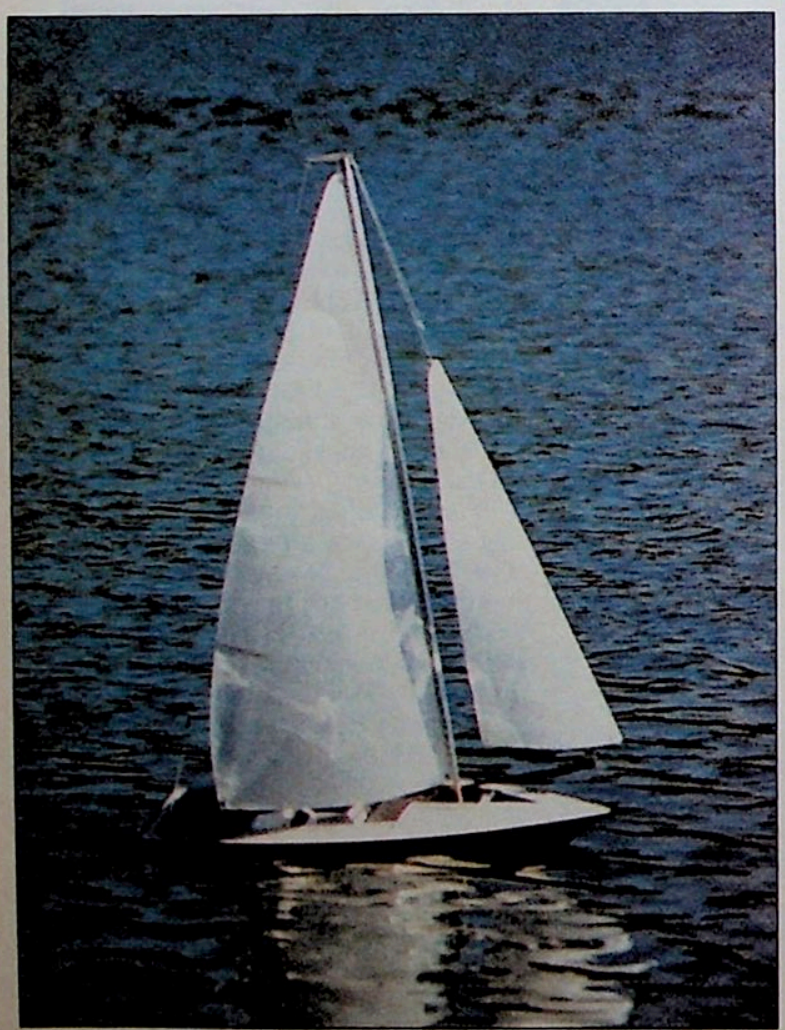
In any case, TINA handled well in both light and medium to heavy wind

continued on page 27

TINA'S TURNER
A Simple Rig for the Hobby Lobby/Krick 'TINA'

BY WILLIAM WHITTEN

The Hobby Lobby TINA is a popular and easy-to-build ABS plastic RC sailboat. Its major shortcoming is its smallish single sail designed for sailing in plenty of wind. When sailing in light or medium winds, TINA needs quite a bit more sail area to perform well. Her unique design makes it difficult to fit a standard stayed sloop rig, and the necessary changes would preclude using the cat rig that comes with the kit. The easiest solution is a simple swing rig engineered to fit the same mast mounting hole as the standard rig.



The Hobby Lobby/Krick "TINA" with the author's swing rig installed, will sail better in light breeze conditions than with the stock single-sail catboat rig.

The swing rig was developed a number of years ago by model yachtsmen in England. It is widely used there and in Europe and is now making inroads among serious racers in this country. Its use is not limited to racing, though . . . the swing rig works just fine on a fun boat like the TINA. This simplified version is easy to build and makes TINA really scoot in light air.

The swing rig is very similar to TINA's standard rig, with the addition of a jib attached to a second boom in front of the mast. As the mainsail rotates, the forward boom turns with it and swings the jib out opposite the main, hence the name "swing rig." Theory tells us that this is more efficient in extracting power from the wind. The rig also simplifies sheeting and requires less power from the sail winch than standard rigs of the same sail area. In TINA's case, it is also compatible with the kit's rotating mast.

"Tina's Turner" can be built from scratch or use the mast from the cat rig. Set the sail and boom aside for use on a windy day. The mast is modified by re-drilling the hole for the boom retaining screw lower on the mast so the boom will be just high enough to clear the deck as it rotates. A three-inch long, 6-32 stainless steel screw with the head cut off replaces the original 3mm screw. A nut on each side of the mast holds it in place. Put a 6-inch piece of dowel inside the mast where the holes have weakened it and cut a slot at the top for the masthead fitting.

If you use the sail plan shown, you will have to make a new boom. Aluminum arrow shafts are readily available and make excellent booms. Dowel plugs are fitted tightly inside the shaft and drilled slightly undersized for the 6-32 screw and then the boom is threaded onto the screw. The jib boom has another dowel plug at the forward end with a screw eye to attach the jib club swivel. The jib club is also a length of arrow shaft with dowel plugs. The main boom and jib club are fitted with small screw eyes at the outer ends.

If you prefer to scratch-build a swing rig, you will need a new mast. The best mast material is half-inch T6 aluminum tubing. Spruce is also usable. Booms are as described above. Another way to mount the booms is to fabricate a "T" fitting of brass tubing and strip silver soldered together. It is stronger and looks better too. A third method is to obtain a 1x1x2-inch block of aluminum, ny-

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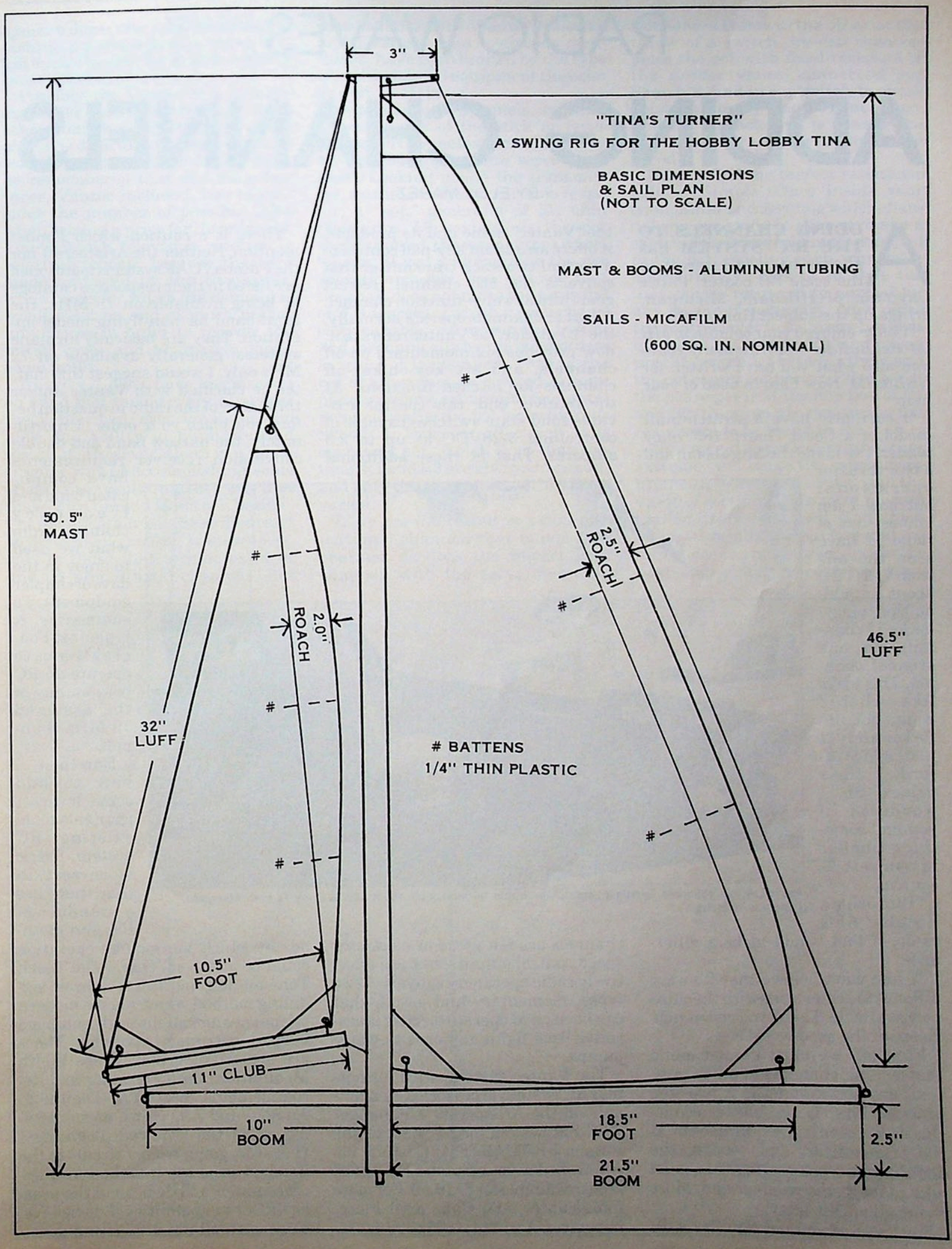
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& SAIL PLAN
(NOT TO SCALE)
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SAILS - MICAFILM
(600 SQ. IN. NOMINAL)
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50.5"
MAST
46.5"
LUFF
32"
LUFF
2.0"
ROACH
2.5"
ROACH
BATTENS
1/4" THIN PLASTIC
10.5"
FOOT
11" CLUB
10"
BOOM
18.5"
FOOT
2.5"
21.5"
BOOM

RADIO WAVES

ADDING CHANNELS

BY ELOY MAREZ

ADDING CHANNELS TO THE R/C SYSTEM has always been of interest to the scale RC boater. Patric Layman, of Hilsdale, Michigan, brings up the subject this month:

"I have enjoyed your column in *MB* (*Model Builder*—em) for many years and also what you have written for *USB&SM*. Now I am in need of your help.

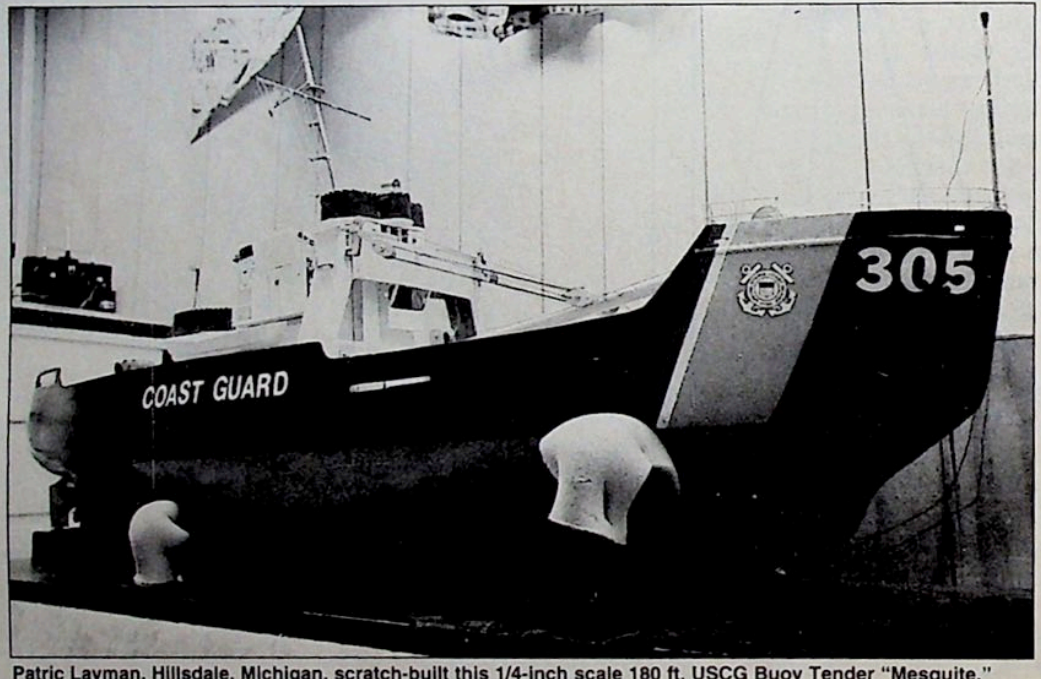
"I currently have a scratch-built model of a Coast Guard 180' buoy tender. I've made the cargo boom and a bow thruster operational but now I am `almost out of radio.' I have seen the ads from VANTEC about an add-on that piggybacks 12 channels on one original channel. This looks like what I want, but unfortunately I just can't afford their prices. So, I wondered if you had something similar in your vast resources.

"I am using a Futaba 6FG radio, if that would make a difference.

"I just can't believe that it's very difficult to achieve this with the chips now available. Thank you very much. Keep up the good work!"

First off, we must keep in mind that adding channels to an RC system, any RC system, is a two-step process. First is the electronic/mechanical encoding requirements at the transmitter, and second, the decoding and integrating that must take place at the receiver end. More about all of this later!

For those of you not familiar with the "Vantec" name and its products, it offers an add-on key-pad control to a normal two-stick transmitter that converts the 5th channel (retract gear) into a twelve-function channel. All other channels operate normally, the "Keulpder," as Vantec refers to it, now provides six momentary on-off channels, and six key-on/key-off channels for latched functions. At the receiver end, this control activates solid state switches capable of controlling 3-28VDC at up to 2.5 amperes. That is, these additional channels are not servo or electronic speed control outputs, but are effectively radio operated switches of two types, momentary and on-off, that can be used to operate electric accessories from lights to horns to water pumps.



Patric Layman, Hillsdale, Michigan, scratch-built this 1/4-inch scale 180 ft. USCG Buoy Tender "Mesquite." Length is 45 inches.

The Vantec system, with all normal RC system accessories, is available on the Aristocraft "Challenger 720" FM system for $474.95; or the Futaba FP-7UAF (FM) for $639.95. A retrofit for your Futaba FP-7FGK is also available for $319.59. For more info: Vantec, 460 Casa Real Place, Nipomo, CA 93444; (805) 929-5055.

There is a caution which I must mention. Neither the Aristocraft nor the Futaba 7UAF systems mentioned are listed in their respective catalogs as being available on 75 MHz; the legal band for non-flying model operation. They are basically airplane systems, generally available on 72 MHz only. I would suggest this matter be clarified with Vantec and/or the maker of the radio in question before you place your order. Unfortunately, the narrow band and double conversion receiver requirements have complicated band and frequency changes from what we used to enjoy in the days of simpler equipment. To summarize, it is against Federal Law to operate an RC boat on any of the assigned 72 MHz channels

Now then... how to add some low-cost channels to an existing RC system. Patric is correct in that there are a number of ICs and methods by which Vantec-like operation could be achieved. One is the Touch Tone audio generator, the basic signaling method which makes modern telephones and all similarly equipped keypad instruments possible. There are also many PWM (Pulse Width Modulation) data encoding and decoding chips, and D/A (Digital to Analog) and A/D chips, encompassing all of the required technology. However, going from a circuit to the finished product, installed and operational, is a little beyond the average RCer's capabilities, I do believe. Even with all the design and devel-

opment done, the first step, that of etching a printed circuit board, will kill such a project for close to 100% of those otherwise interested.

Possibly the Vantec unit is more expensive than it should be; without other similar products being available, it is difficult to make a comparison. However, in all fairness, it must be remembered that any manufacturer, Vantec included, has to consider the number of possible sales when setting a price for its products. Your 19-inch television receiver is relatively cheap, because they are made and sold by the thousands, while items for which the demand is small must be sold at much higher unit prices in order to recover the initial costs and ultimately make some profit.

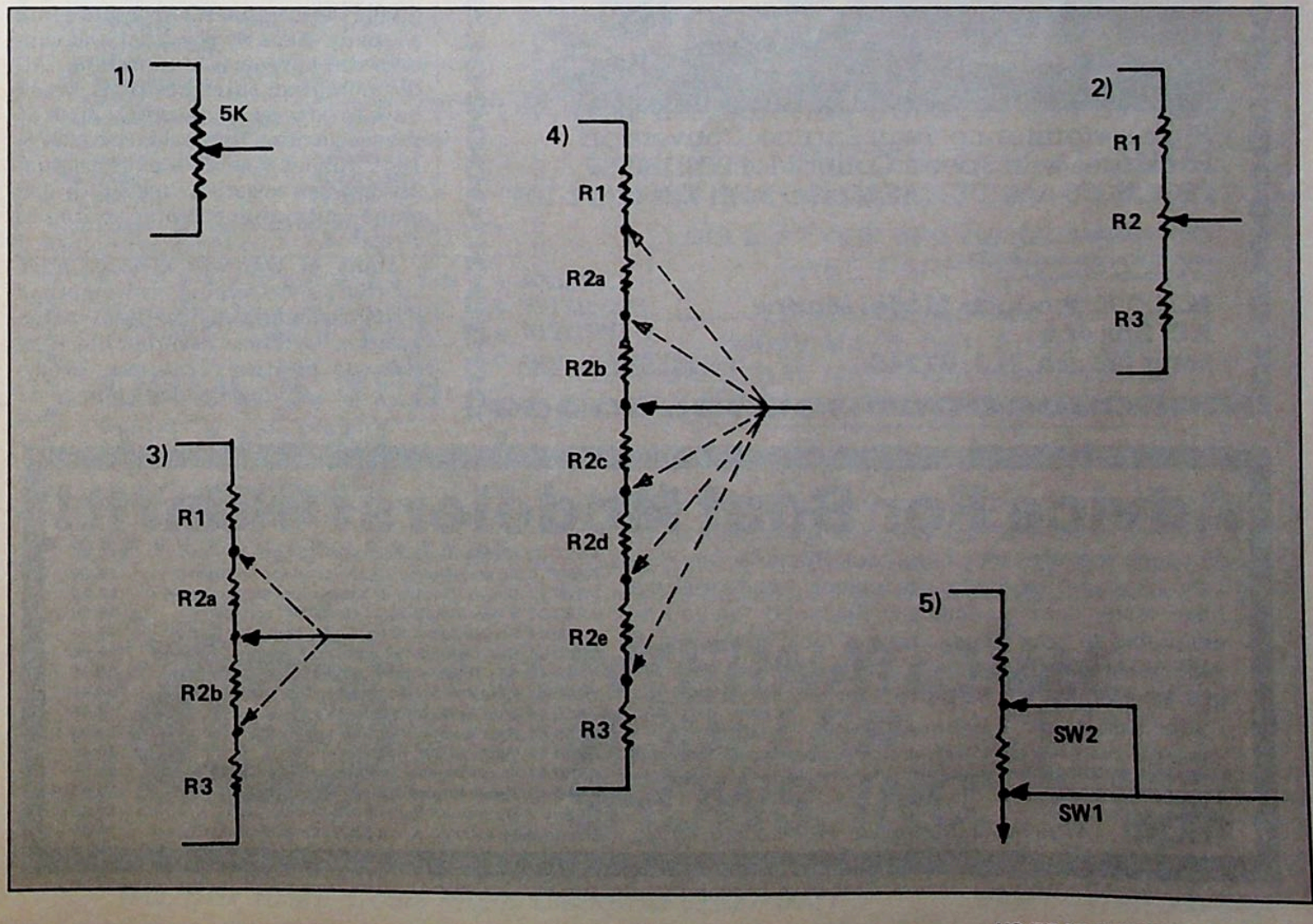
Anyway, I don't have any circuits on hand that can do everything that the Vantec can, even for those who have the ability to duplicate and install it. However, there is a much simpler way of accomplishing some of the same results, and in a way that those with limited skills can handle. The modification to be described can't be done to all existing transmitters, only to those that include extra or unused proportional channels. But that includes a lot of units available to RC boaters, who as already mentioned, have been limited by the type of multi-channel equipment they can buy on 75 MHz.

By proportional channels, we mean of course any of the stick or lever controlled channels which ultimately control the appropriate servo positions. Looking inside the transmitter, we find a common variable resistor, a "pot," generally of 5K ohm resistance. Ultimately, as the pot shaft is moved, the servo output wheel follows. If you will examine the pot operation closely, you will see that the shaft does not move the total 260 or 270 degrees of which it is mechanically capable; its movement is limited mechanically by the mechanism in which it is installed. That is, the pot shaft cannot be rotated to completely remove all circuit resistance. Schematically, the pot looks like our Sketch 1. However effectively it is operating per Sketch 2, in that sections R1 and R3 are always in circuit, and only the resistance within R2 is varied.

If we are interested in a non-proportional channel, that is one that operates as does the retract gear channel, with the servo operating from one extreme to the other at the throw of a switch, we can then replace the pot with fixed resistors of the proper value, connected per Sketch 2, and use a switch to chose between the top and bottom of section R2. In fact, this is exactly the way *some* retract gear channels are wired.

How to find the correct resistance values? Simple! Once inside your transmitter and deciding which channel you are going to change, make a sketch of the wires originally attached to the pot, labeling each wire color appropriately. This is so that the unit can be returned to normal for any reason if necessary. Now move the control lever to its limits towards the top of pot section R2, and measure the resistance between there and the pot center connector. Effectively, the pot wiper is at the junction of R1 and R2, thus you are measuring the resistance to be found in R1.

Now move the pot lever to the other extreme, and make the same measurement, which will give you the value of section R3. In most modern transmitters, you will find these values to be alike, or so close that the difference can be ignored, and for the next step simply choose two stan-



dard value resistors closest to those values measured.

For the sake of arithmetical simplicity, let us say that we determinedsections R1 and R3 to be 1500 ohms. As the total pot value is 5K (5000 ohms), we then know that the middle section, the one which in the original transmitter is varied, is 2000 ohms (5000 less 2 x 1500).

With me so far? Sure you are, and the next step probably becomes obvious to you. Remember that with fixed resisters and a switch to select the opposite sides of R2, our servo would operate from one extreme to the other as the switch is operated. Now . . . if we were to divide R2 into two fixed resistors of equal value, say 1000 ohms each, and connect them per Sketch 3, and using a DT (Double Throw) switch to select between the various points of resistors R2a and R2b, we now have a channel in which the servo can be commanded to stop in three positions; full left, center, and full right!

Well, admittedly it does not have the sophistication or ease of installation of the Vantec system, but it is inexpensive. You'll have to adapt servo switching devices, like Micro-Switches, to turn your accessories on and off, but those are simple mechanical matters. And the only limitations from here on are mechanical. Obviously, when using the servo as a switcher, the amount of servo throw necessary to actuate the next step has to be considered, and a 90 degree servo is probably good for only three or four switched positions.

All is not lost. Our last (Winter 1990) issue of *USB&SM* describes a simple method by which the throw of any servo can be increased to as much as 180 degrees when operated by the normal transmitter channel, including our channel modified as described. That much servo output wheel movement will make it much easier to add mechanical switchers or even to increase the number of switched positions. However, beware the commercial 180 degree-retract gear servo, as many of them are not truly proportional over that range, but travel completely from one extreme to the other when triggered, with no intermediate stops.

Now back to the transmitter! Should you opt for the 180-degree movement servo, and want some more intermediate stops, simply divide the original R2 resistance into as many steps as you like, and connect the appropriate switching. After more than three positions, you'll have to go to a rotary switch, such as the six-position Radio Shack No. 275-1537. In that case, divide the original 2K into five resistors (use 390 or 430 ohms units) connected according to Sketch 4.

Many of you will already have spotted a shortcoming to this method . . . it is sequential. Thinking of switch position R1/R2a as Position One, R2a/R2b, as position Two, etc., every-

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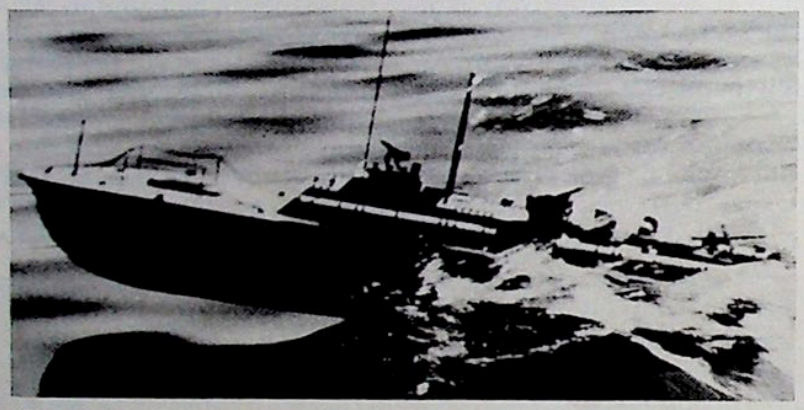

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FALL FLOATING *REGATTA*

BY STU RICHMOND

SOS—SOS—WE'RE SINKING—SOS—SOS. Most sea battles have no land based witnesses . . . but while standing on dry land at the edge of Lake Davis in Orlando, Florida, our telephoto lens caught the battle action as a destroyer rapidly took on water and settled deeper and deeper while the heavy cruiser "Oregon City" and battleship "North Carolina," both of whom had taken hits, slipped away. The winning warrior was a tiny electric powered Japanese sub that was just out of range of our camera lens . . . the heading picture shows the aftermath of the "BB" battle and you can plainly see how our destroyer is low in the water. Its pumps couldn't empty out the water as fast as it was being taken on through the BB shot hull holes. The four warships were brought by Don Cole, Greg Wilson, Mike Smith and Charles Griffin, who are members of the Florida Ghost Fleet, a chapter of the International RC Model Warship Combat Club. The boats actually fire Daisy match-grade BBs under the pressure of Freon 22 canned gas at 100 to 150 pounds per square inch. A hit below the water line scores 50 points . . . a hit on the black band representing the water line scores 25 points . . . any hit above the water line scores 10 points. Skunkworks Manufacturing is a regular advertiser here in *USB&SM* . . . and they make maritime wartime battle "stuff" for combat.

All who competed in the low key rally, regardless of score, received handsome wood and brass plaques as a reminder of a fun day at Lake Davis in Orlando, Florida, USA. That's Captain Howard's Coast Guard boat in the picture.

Orlando's Lake Davis is nestled in a quiet residential section in the south-and-east of downtown . . . just west of the intersection of Gore Street with Mills Avenue . . . it's one of the thousand lakes that add to the local

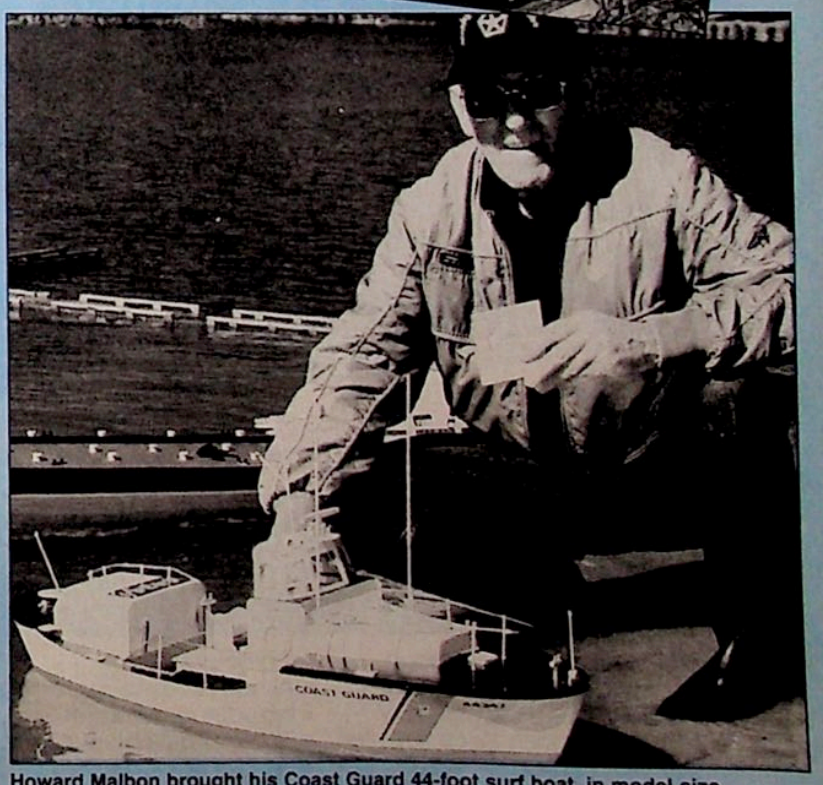
beauty. Boating action normally occurs from noon to 2 p.m. every Sunday, but after the long, hot, humid summer passes, a major regatta takes place the second Sunday in November . . . from 9 a.m. to 2 p.m. Details can be had by writing to or visiting Captain Mike Albert at Bob's Hobby Center, 7333 Lake Underhill Road, Orlando, Florida 32822, or call the captain (daytime only) at (407) 277-1248. You can also pick up the latest issue of *U.S. Boat & Ship Modeler* at the Hobby Center.

The fall regatta sees lots of action. This year they had a floating rally competition . . . it was lots of fun . . . it had a prescribed course, buoys, narrows, and a floating dock for each captain to dock into and show his/her skills . . . they scored the voyages . . .

Captain Mike Albert's 1937 Century cruiser was on its first outing. The floating dock can be seen out in the water just above the captain's channel flag. To the dock's right are the sticks representing sailboat docking and in the background is #4 buoy for their rally. (Insert, top) This close-up shows Captain Mike's gear drive system . . . specifics in text. Fuse at extreme left is protection if prop gets entangled with weeds. (Insert, bottom) Barbie, the plexiglas, and the Midwest mahogany are store bought. Mike handmade all above-deck aluminum hardware with only a file and sandpaper!

LISA LOU attracted much attention . . . built by dentist Captain Albert Marschall, who is holding his deluxe Ace NAUTICAL COMMANDER radio. (Insert, top) This bow-to-stern view of LISA LOU shows the forward audio system that works from 12 of the 24-volt supply. Bay behind the round speaker receives the 24-volt gell cell power pack. Rearward are the electronic switches and the Ace receiver wrapped in foam. Boat is very large, and very handsome . . . drew much spectator attention. (Insert, bottom) This deckhand working on LISA LOU's bow has a wet-looking mop . . . wetness created by using clear epoxy glue.

Bruce Reny (back to us) brought a handsome pair of Fairwind sailboats by Kyosho. One has been customized with Costa Rican teakwood and vinyl interior upholstery.



Howard Malbon brought his Coast Guard 44-foot surf boat, in model size. Thirty-three-inch kit by Dumas has a pair of Robbe gear reduced (3:1) motors for power. Real boat carries two 170 horsepower diesels. This is a training boat to teach coast guardsmen close-in surf work. Captain Howard's oil tanker is in the background.

all the prizes were simple but beautiful wood and brass plaques as reminders of the fun of the day at Lake Davis. The dockmaster for this year's regatta was Dorman Lowry, a retiree from the nited tates Navy.

This is a large boat and ship function. Pierre Lagisquet brought his PT-9O replica built from a Lindberg kit. His starboard motor was a Reedy . . . his port motor was a Tamiya and 7.2 volt Sanyo cells drove the twin Octura #430 props. The kit called for a single drive with a gear box . . . Pierre chose twin screws instead. An Aristocraft Challenger 250 handled steering and throttle.

Orlando's Bob Benton sailed an old display-only sailboat that he'd bought from a hobby shop over twenty-five years ago . . . bright orange main and jib . . . he sealed styrofoam in the bow and stern . . . ran fiberglass reinforcing inside and below the edges of his mahogany deck . . . and then drove down 76 tiny brass screws to hold the deck onto the fiberglass reinforcing just below deck level. Bob's waterproof hatches were the upper sections of pieces of Tupperware, sealed and screwed to the deck and the matching cover as a closure for waterproofing . . . simple, brilliant, and cost-effective. Bob's keel bulb started as a half-round balsa wood plug from which he made a plaster-of-Paris female mold. He laid Saran Wrap in the mold followed by glass cloth and resin . . . filled with #12 lead shot and leveled with resin. Bob made two of these halves and attached one to each side of the keel plate . . . simple and safe . . . he had no hot lead to pour! Control for this antique sailboat was a new modern Ace Nautical Commander . . . the deluxe version we reviewed in the summer '90 issue of *USB&SM* . . . and Bob used an Aristocraft 402X servo on rudder, two ganged 402Xs on jib trim, and a homemade heavy duty servo for combined main and jib control. It's worth a trip to Lake Davis to see such cleverness!

Sixteen-year old Yvonne Dudek was the river pilot for her uncle's Graupner "Glasgow." Her uncle, Marian Stys, came to the US from Poland about eight years ago and his level of craftsmanship on the Glasgow had to be seen to be appreciated. The boat started as a Graupner kit of a circa 1900 steamboat that worked off-shore in the north of England and had twin side-paddle wheels.

It was the first time out for Marian's boat. The Graupner steam boiler system worked perfectly . . . the boiler heater burned butane. Before leaving Poland, Marian had been very active in boating . . . he says "hello" to his Polish friends.

Andy McKay brought "Shelly Foss," a tugboat by Dumas, a Sterling Models Chris-Craft with twin Barbie dolls, a "Creole Queen" by Dumas and a scratchbuilt he was finishing that began with a set of photos he liked. Andy used mostly spray cans of Krylon paints . . . he likes the color assortment and he was partial to Futaba's RC equipment.

Captain Mike Albert's new project was a 1937 Century he'd largely scratchbuilt that was mostly made from Midwest brand hardwoods and mahogany available in most hobby shops. Our pictures hardly do it justice! Propulsion is by a Kyosho 600E on ten Sanyo 1800 mAH cells for 12 volts. Mike uses electric car gears from Associated for a 3:1 speed reduction to drive the 1-3/4 inch Dumas prop. An Ace "CVC" constant voltage charger is his choice for 16 hours. Mike has used this style drive system for about eight years . . . no lube on the gears, and little wear is evident. Clever people, these Orlando

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Scale RC Boaters! Of major significance . . . all of Captain Mike's metal hardware showing above deck is aluminum . . . it's 100% made by Captain Mike using head, hands, *and a file and sandpaper only!* It's kinda tough to do an encore after this 1937 Century, but Mike is now finishing a Conley running V-8 glow ignition engine (about 95% done at regatta time). Gary Conley, who makes the kit for the V-8 engine, says he thinks this will be the first time one of his running engines gets used as inboard power for a model boat.

Another major building project attracted our lenses . . . it is the "LISA LOU" giant tugboat built by Captain Albert Marschall, who's a dentist. Power is from four six-volt gel cells that are ganged into a 2x2 pack with a single carry handle . . . the pack fits amidships of the hull. "LISA LOU" also uses one of the new Ace Nautical Commander deluxe radio systems and uses one heavy duty Ace servo for rudder steering and a bank of electronic switches for all other functions. Captain Al's tug attracted much attention . . . he patiently stood by to talk with admirers and to answer their questions. While much boating takes place in remote areas, Lake Davis is right in the city, and has a sidewalk around its perimeter. It attracts many interested spectators who find the hobby fascinating. The 24-volt power system will supply about ten hours of running power. A Robbe diesel sound generator added to the realism . . . spectators loved the way the diesel audio advanced with the throttle action on the Nautical Commander, and there was music, running lights and all the regular true-to-scale nautical stuff that goes with a working tug. Captain Al spent a lot of time doing public relations, visiting with all the people admiring his boat . . . it seemed fitting that when the drawing was held for the new Futaba FP-2NCS . . . the winner was Captain Al! We heard him mutter something about, "Well, guess I gotta start building something new again . . ." Maybe next year we'll see what our marining dentist has afloat at Lake Davis!

We plan to be at Lake Davis next year . . . why not make contact with Captain Mike Albert before next November and come to Orlando, the city beautiful, to see or take place in their next regatta. Sorry, no internal combustion engine hulls allowed. And if you wanna read all about it, why not send in your subscription to *USB&SM* now (only $26.75 for two years) and follow the fun! •

TINA *Continued from page 17*

(I'm still waiting for a real blow!). Her steering and tacking were very good . . . the adjustable keel helped here. The Graupner SEGELWINDE winch performed flawlessly and will eventually find a new home in either my EC12 or 10-Rater.

CONCLUSION

The Hobby Lobby TINA with the Graupner SEGELWINDE winch is about as simple as an RC sailboat can be. She's attractive, easy to build, sails well, the price is relatively modest and the winch can be used later on a larger boat. TINA isn't meant to be a racer, but a one-design class built around her might be fun, especially if there is plenty of wind. It might be a way to get the wife and kids involved or even steal away a few guys from the RC airplane or powerboat club. If you want a simple RC sailboat to have fun with, give TINA a look. •

STORE *Continued from page 13*

control system; hi-rate switching (2500Hz) for maximum efficiency and cooler running; signal filtering for smooth throttle response; five Z-40 MOSFETS to deliver 700 amps peak and 100 amps continuous power . . . enough for the 2000 watt Astro Cobalt FAI 60 motor; works with six through 32 cells; a waterproof rubber-coated circuit board that works under water; and a built-in aluminum heat-sink that doesn't need water cooling.

For more information, contact Bob Boucher at Astro Flight, and be sure to tell him you read about his products in *USB&SM*.

• • •

Eagle Miniatures Inc., P.O. Box 468, Streamwood, IL 60107 announces a line of kits and accessories for RC scale model boats and aircraft. The boat line includes Mk XIII torpedo kits and dinghies for PT boats, plus missile and pylon kits for RC scale aircraft. Other items include 55-gallon drums, life rings, and more. Unfortunately, the company does not specify the scale of the items offered, which is pretty important to know. You can find out by sending one dollar and an S.A.S.E. to the address above.

• • •

The Tower Hobbies Annual Catalog, 20th Anniversary edition, includes more than 10,000 items for radio control modelers. Over 300 manufacturers' products are listed and illustrated in the 288-page catalog, along with reference charts, helpful hints, and "how-to" information. Separate product and manufacturer indexes make it easier to find specific items quickly.

A FREE Tower Hobbies catalog is included with your first order, or you can purchase one for $3.00, which will be refunded with your first order by sending in the refund coupon. Order by mail from Tower Hobbies, P.O. Box 778, Champaign, IL 61824-0778, or call Toll Free 1-800-637-4989. In either case, be sure to mention that you saw it in *USB&SM*.

• • •

Model Ship Marina, P.O. Box 15201-U, Alexandria, VA 22309, phone (703) 360-0626, now offers a redesigned thickness sander. The original sander was discontinued because of problems in obtaining certain parts. The new model weighs 20 pounds and is mounted on a sturdy hard maple wood base. The dust collector/safety cover is wood and plastic, and accommodates a standard 2-1/2 inch shop vac fitting. The drum length has been increased to six inches, allowing the use of sheet sandpaper which can be cut to size and locked on the drum by a special mechanism. The machine is driven by a 1/6 horsepower NEMA Frame 48 motor, and the metal table adjusts from 0 to 3/4 of an inch. For more information, contact Gene Larson at the above address. •

LOG *Continued from page 6*

1990 APBA Nats would not have been possible.

In closing, I feel that my trek from Pocatello, Idaho, to Olympia, Washington, far exceeded any expectations I had, and that I made many friends for years to come. Sincerely, Bill Myers.

After noting the tone of Bill's letter, we have to point out that he can undoubtedly give himself a lot of credit for the way he was treated at the APBA Nats. It only takes a few words and gestures from a stranger for a group of modelers to know when they are talking to a sincere and friendly individual who deserves their kindness and attention. Bill obviously conveyed those qualities to the boaters in Olympia, and received what he deserved. And his letter all the more proves it!

STOLEN

From the good to the bad; an item in the November/December NAMBA

continued on page 39

ELECTRORIGGER 6-8

BY DAVID FRANK

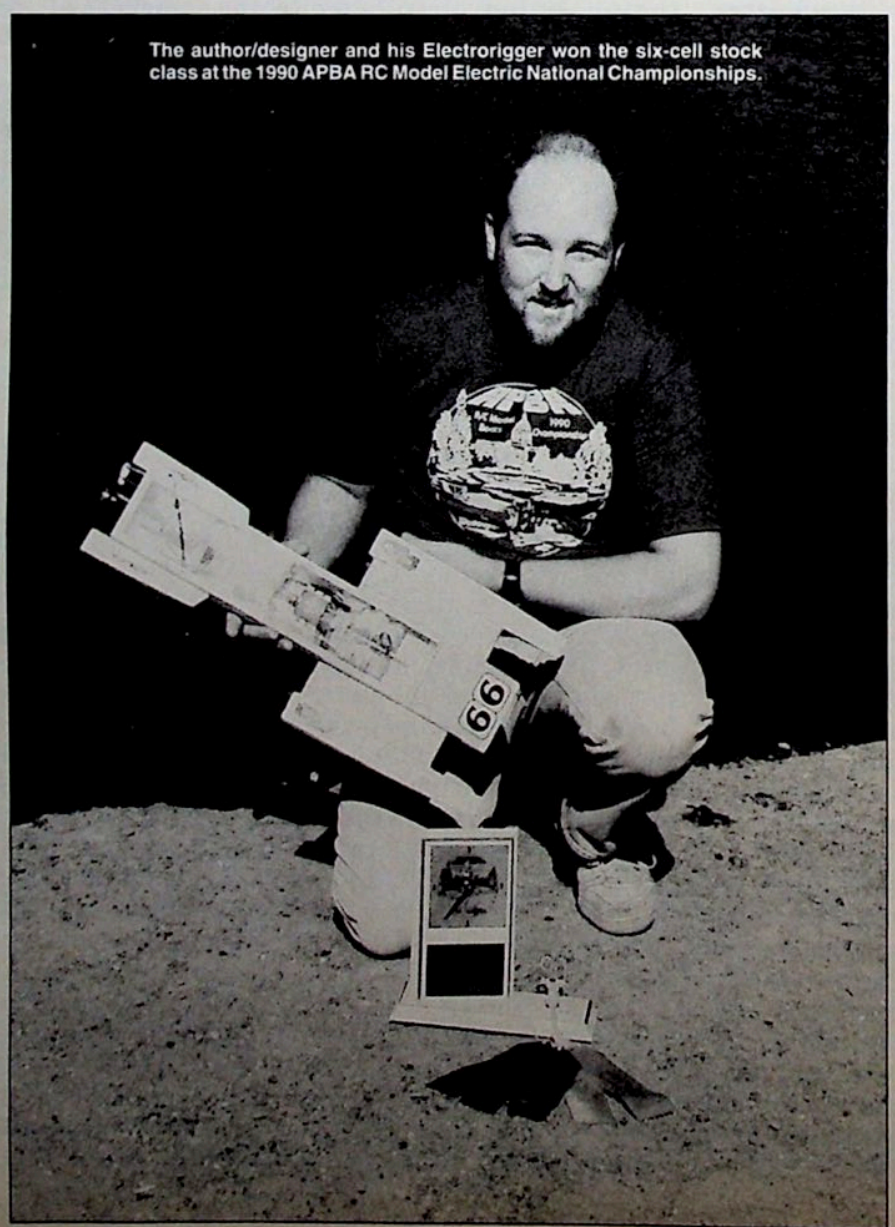
The Electrorigger 6-8 has designed for competitive racing in the new fast electric classes for six to eight cells. The basic outrigger design has for many years established itself as the fastest hull type for gas powered model boat racing. When combined with electric power, the results are equally as impressive. Using a Twister 3001 Pocket Rocket motor and six SCR cells, I have been running close to 30 mph. With seven cells, the speed picked up to about 35 mph, but with speed you sacrifice run time. I have typically been getting one and three quarters to two minutes run time using 900 mAH SCRs. This is plenty of time for a competition five-lap half-mile race. I used this same combination to win the six-cell stock class at the 1990 APBA RC Model Electric National Championships.

After nine months of competitive RC car racing (Offroad then Onroad oval) I've gained a great deal of knowledge about batteries, charging techniques, speed controls, connectors, and motors. Much of what I have learned can be directly applied to electric boats and will be the subject of future Fast Electric Boat Racing articles.

Before construction, study the plans and photos to familiarize yourself with this project. When buying the sheet balsawood, look through the stack for pieces that are lightweight and don't have too many splices of different density woods.

The hardware can be constructed as shown in the plans, although Octura makes hardware (rudder, strut, shaft) for electric boats that will work well. The Octura hardware usually comes in durable beryllium copper, but if you want to save weight, it can also be ordered in aluminum. To construct the hardware shown in the plans, you need a pair of tin snips, a high-wattage soldering iron (40-60 watt) and Sta-Brite silver solder, and it's helpful to have a motor tool with a Tough Grind wheel. The brass and aluminum sheet are K&S products and the aluminum angle can usually be bought at hardware stores or home centers.

With the Twister 3001 motor clicking off rapid rpms, the Electrorigger has recorded speeds in the 30-35 mph bracket. As easy as it is to build, this could be your boat in a few weeks time . . . if the lake ain't froze!

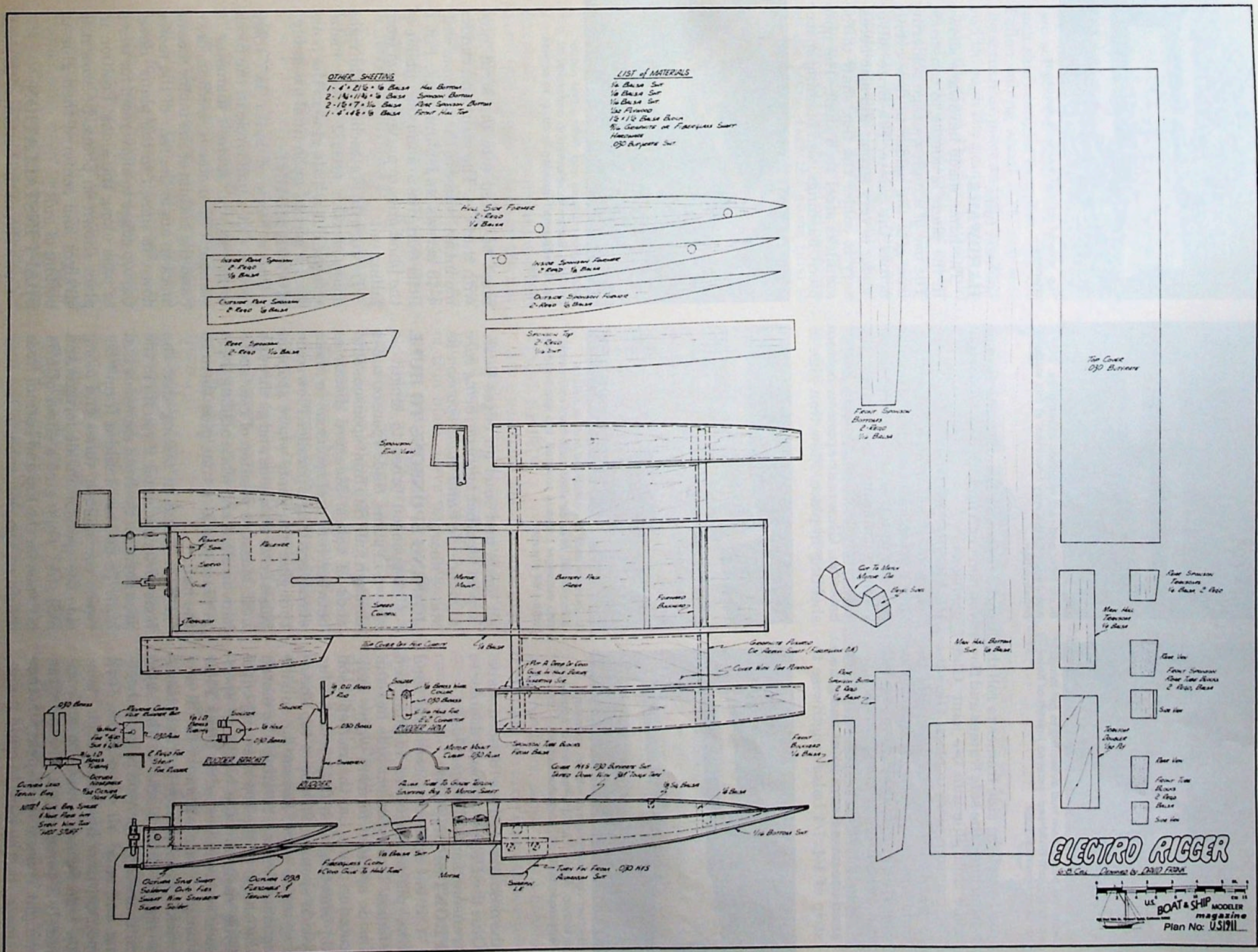


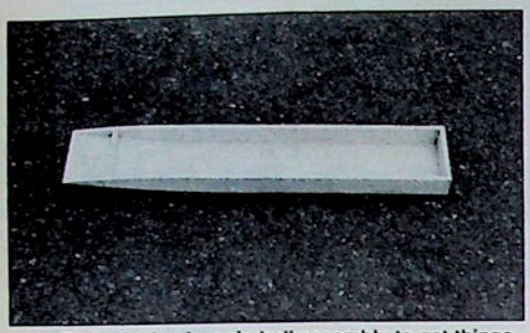
The author/designer and his Electrorigger won the six-cell stock class at the 1990 APBA RC Model Electric National Championships.

MAIN HULL

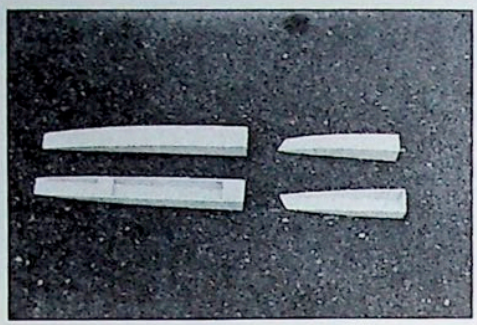
To cut the parts in the plans you can use a hobby knife and a straight edge or a scroll saw or band saw. After cutting the parts for the main hull, hold the side pieces together and sand them on a sheet of sandpaper laid flat on a smooth surface. Use long smooth strokes until the pieces are the same. Drill the 5/16 holes for the sponson tubes. This boat can be built entirely using cyanoacrylate (instant) glues such as Satellite City's Hot Stuff. It is available in three viscosities. We will be using mostly thin and some thick. When gluing parts with instant glues, the use of a glue accelerator spray will speed up building even more. Lay the bottom sheet on a flat surface. Glue the straight parts of the bottom of the side frames (the last 12 inches) to the bottom sheet. Press down on

FULL PAGE PLANS AVAILABLE, SEE PAGE 60.

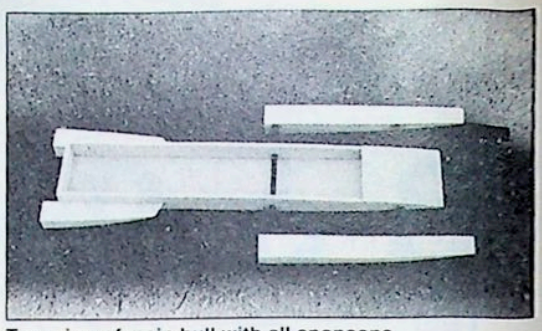




Build the basic main hull assembly to get things started. Front bulkhead installed just aft of holes for front sponson tube.



Basic front and rear sponson assemblies. Accuracy of work very important at this stage of construction.



Top view of main hull with all sponsons attached.

the tips of the side frames to roll the bottom onto the side frames and flow some thin glue into the joint. Glue the transom piece in place. Glue the forward bulkhead in place just behind the front sponson tube holes. Sand the front bulkhead top to match the contour of the side frames.

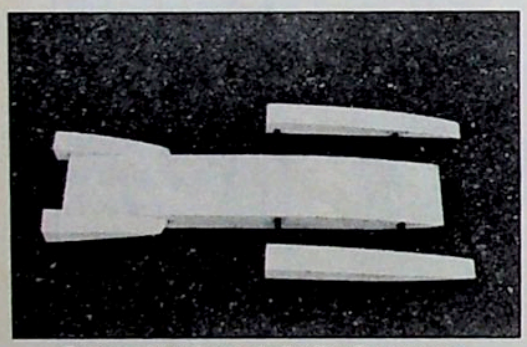
Glue the nose top sheeting in place, sand the nose flat in front and glue a strip of 1/4x1/4 balsa lengthwise to the nose and sand to a rounded shape. Glue the 1/32 ply transom doubler to transom, sand all edges flush.

FRONT SPONSONS

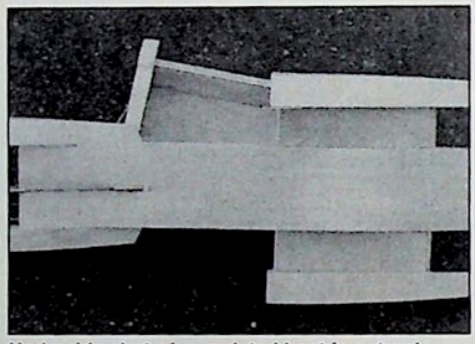
Cut out sponson pieces and sand like pieces together to matched shapes. Drill sponson tube holes in inside sponson formers where indicated on plans. Lay the front sponson top sheeting on a flat surface. Glue inside sponson former to top sheeting inside edge. Repeat for outside sponson former, bending it to match the shape of the top sheeting edge. Glue sponson tube blocks in sponsons where indicated on plans. Flow thin glue into all joints to fill any cracks. Sand sponson former bottoms to match tube blocks to the same contour. Glue sponson bottom sheeting and sand all edges flush. Drill sponson tube blocks through sponson side former's holes to approximately 3/4-inch depth. Try to drill as straight as possible. Repeat for other sponson, but be sure to build it mirrored (opposite hand) to the first so you don't end up with two left or right sponsons.

REAR SPONSONS

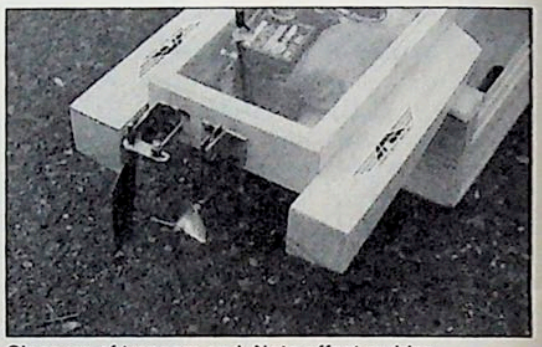
Lay top sheeting on a flat surface. Glue rear sponson inside and outside formers to top sheet. Glue the rear sponson transoms in between the side formers. Sand sponson former bottoms. Glue rear sponson bottom sheeting in place. Flow thin glue in all joints and sand all edges flush. Repeat for other sponson, *being sure to make a left and right sponson* as stated above.



Bottom view of main hull with all sponsons attached. Again, careful alignment of sponsons very important to final performance.



Underside shot of completed boat in natural balsa finish. Area between hull, front sponsons, and outrigger tubes is covered, top and bottom, with 1/64 plywood.



Close-up of transom end. Note offset rudder position. Switch is velcroed to underside of hatch, with small opening in cover to access handle.

JOINING SPONSONS TO HULL

Cut sponson tubes to length as shown in plans. Slide sponson tubes through hull. Slip front sponsons onto ends of tubes. Measure distances between hull and sponsons to make sure everything is parallel. Flow some thin glue into joints where sponson tubes enter sponsons and go through hull. Measure position of rear sponsons on plans and while holding them in place one at a time glue them to the hull.

I have found in testing that the boat performs better if you fill in the area between the front sponsons and hull. To do this, build a frame between the sponson tubes and along side the sponson inside former and hull side. Then glue a sheet of 1/64 plywood on the top and bottom from the front sponson tube to the rear sponson tube.

HARDWARE

The home made hardware shown in the plans is simple to construct. The use of a high wattage soldering iron gets the solder to flow evenly across the joints. Sta-Brite silver solder is very strong and also necessary to solder the flex shaft to the stainless steel stub shaft. The nose piece, bushings, and bushing spacer must be glued into the strut tube with thin CA. The strut and rudder mount are bolted to the transom with 4-40 screws and blind nuts. Put a little thin glue around the outside of the blind nuts to prevent them from falling out.

The turn fin is attached to the right sponson with #8x1/2 sheet metal screws. Put a little glue in the holes for the screws upon final assembly.

MOTOR MOUNT

Cut a block of balsa 1x1-1/2x3 inches. Cut a half circle in the block to match your motor's diameter (a standard 05 motor is 1-3/8 inches). Sand the bottom of the motor mount block to angle the rear of the motor down as shown in the plans. Bevel the top edges to allow room for wires to pass along the sides. Position in place shown on plans. Be sure it is straight and centered then glue to bottom of hull.

SHAFT INSTALLATION

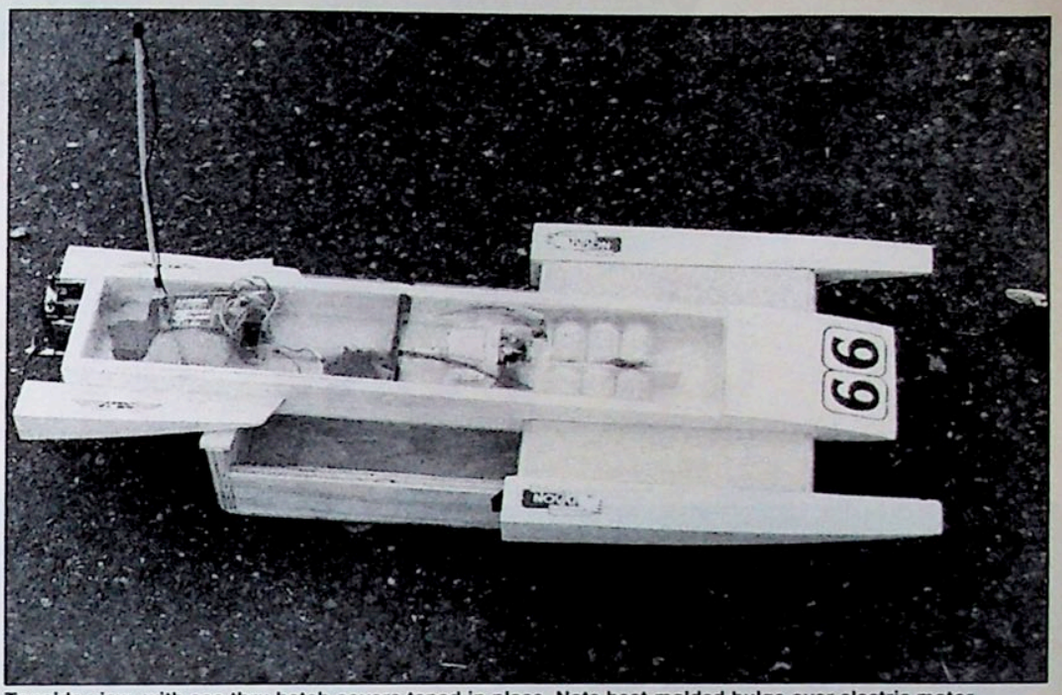
Cut a slot in the bottom of the hull

where the shaft passes through as shown on the plans. Mount motor and clamp it down with clamp made as shown on the plans. Cut the stuffing box guide tube so it protrudes inside the hull to one inch from the motor shaft and 1/4 inch through the bottom. There are two types of shaft couplers available. The Octura coupler has a set screw for the motor shaft and a three-jaw collet to clamp the flex shaft. The MRP coupler has two set screws. Both work well. Attach shaft coupler to motor. Slip the Teflon tubing about 3/16 inch into the strut nose piece and slip the other end through the guide tube through the hull bottom. The flex shaft should be cut a little long until you solder the stub shaft on and determine the final length. Slide the flex shaft through the strut, Teflon tube and into the coupler. The guide tube might have to be bent a little to allow a gentle transition through the hull.

With everything lined up as shown on the plans, tack the guide tube to the hull bottom with thick glue. Lay a piece of lightweight fiber glass cloth (2x3 inch) over the guide tube and work it to lay flat on the hull bottom. Saturate the cloth with thin glue. Remove the flex shaft and solder the stub shaft to it. Mount the drive dog to the stub shaft approximately 3/4 inches from the threaded end. This should leave enough room to mount most propellers. File a flat on the shaft for the set screw in the drive dog, and use Loctite on the set screw. To determine how much to cut off the flex shaft, slide it into place and clamp down into coupler. Measure the distance from the end of the drive dog to the back of the strut. This is how much to cut off of the other end of the shaft. After cutting, tin the end with solder for about a half inch to prevent it from fraying.

RUDDER LINKAGE

Position rudder servo in rear of hull as shown on plans. It should lay on its side and will later, after the boat is painted, be stuck down with thin black servo tapes. Note: The photos show a micro servo being used. This was done to save a little weight. Any type of standard servo should work fine. Draw an imaginary line where the pushrod would go through the transom and drill a 5/16-inch hole for it to pass through. The pushrod may have to be bent a little for it to work freely. Du-Bro E-Z connectors are used to attach the 1/16-inch pushrod to the servo arm and rudder arm. After painting, a Bruline pushrod seal will be glued to the inside of the transom around the pushrod hole.



Topside view, with see-thru hatch covers taped in place. Note heat-molded bulge over electric motor. Flat sheet works OK, this is just gingerbread.

FINISHING

I recommend using K&B Superpoxy for the first two coats to seal the wood and provide a good hard finish. Remove all hardware and sand with fine sandpaper before painting. The Superpoxy is thinned 25% and brushed on, sanding between coats. You may the use other type paints to add color and decoration. Remember, paint adds weight so keep the coats thin.

FINAL SETUP

After you have finished painting, reinstall the hardware, using Loctite on all screws. Put a small amount of thin grease on the shaft. Put a piece of thin black servo tape under the motor and clamp it down. There should be a 1/32-inch gap between the drive dog and the strut. The battery pack is taped down with glass strapping tape. I have had good results using a Novak T1X speed control. A microswitch-type on/off control may work, but won't hold up over the long run. I choose to use a separate battery pack for the receiver. I also use Sermos Snap connectors for all of my battery and motor connections.

Even though the entire cover is taped on, you may still get some water inside the hull. I put the receiver, speed control, and receiver battery in plastic bags and close off the ends around the wires with a ty-wrap. The covers are made from K&S .030 Butyrate sheet. The front cover may bulge up a little where it goes over the motor. The covers are taped down with Scotch 3M "Tough Tape." This tape is the best product I have found for sealing radio boxes in six years of modeling. It's waterproof, flexible, sometimes reusable, and doesn't leave sticky goo on the boat. The antenna is run up through a 12-inch piece of nylon tubing which is glued to the rear cover through a 1/8-inch hole.

The receiver on/off switch is attached to the rear cover on its side with thin black servo tape. A hole is then cut in the cover above the switch so it can be turned on and off using a small screwdriver. The hole is then covered with a piece of tape before running. Between runs you only need to remove the front half of the cover. After a day's running remove all of the tape. If it is left on for a long time it will be difficult to remove.

RUNNING

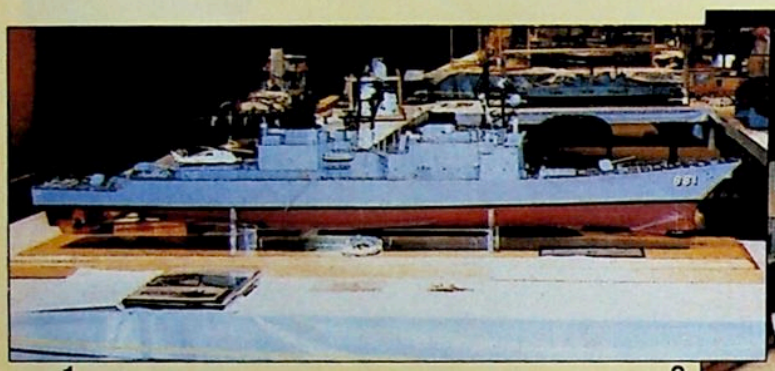
As this is a high performance boat, it may possibly flip or quit in the middle of the lake. For this reason I recommend having a rowboat, inflatable raft, or casting reel with a rubber ball for retrieval. **Do not swim after the boat.** It might suddenly take off and hit you, or you may get tangled in lily pads and drown. People *have* died swimming for model boats! Take the time to get some help. Enough said.

I have run many types of motors in this boat. A 15 to 20-turn modified motor or Roar stock motor will work well. I have also used Astro Flight

continued on page 39

CAPITAL MARINE

BIENNI
MODEL E



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(1) Bob Okerholm, Sharon, Mass., won First Place again this year with his RC destroyer ""USS John Hancock." (2) Bill Huxhold's beautifully done classic "USCG Campbell," with a five-inch mount that fires .22 caliber blanks and racks that drop depth charges which explode after they sink! (3) The radio controlled five-inch gun on Bill Huxhold's Campbell tracks left, right, up, and down, in addition to firing blanks. (4) Paul Jouroain's tug "I'odilus" with two deck houses. Classic version is on hull, while the modern deck house is displayed at right.

The Capital Marine Modeler's Guild Biennial Ship Model Exhibition took place in September 1990 in Ottawa, Canada. The first show, in 1988, was excellent, and this second show is proof positive that the Guild, with the support of the Ottawa National Museum of Science and Technology, can give us a world class event. The guild's task force, made up of Ted Scrivens, Don Koehler, and Wayne Morris, deserves a vote of thanks from the shipmodelers and the general public for making it possible for us to see the terrific models being built in North America.

For too long, the ship model building community has tended to be split between two fundamental factions, operating (RC) and static scale. Events have tended to be focused on one or the other. It's only in recent years that the scale RC modelers have been showing up on an equal status with the traditional static scale builders. The Ottawa show had the best of both worlds on display, with a very interesting mix of ship and boat models.

War ships, full rigged ships, work boats and tugs were everywhere in the show. There were seven prize categories of models. Categorizing models is one of the challenges for show organizers, which can only be finalized after all the participants have shown up at the exhibition. This show had a variety of categories; scratch-built models of powered ships, sailing ship, (subdivided into RC and Static models), plus two additional kit classes of RC and Static. Warships were the winners in the RC scratch-built (powered ships). Bob Okerholm, from Sharon, Massachusetts, placed first with his model of the destroyer "USS John Hancock." Lucien Desmarais, of Jolliette, Quebec, took second with his destroyer "USS The Sullivans," and

MODELER'S GUILD

AL SHIP XHIBITION

BY DAVID MAINWARING

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(1) Luxury yacht "Pegasis III" by Jens-Uwe Steinborn. (2) Tug "Imara" by Lou Hills, Concord, Mass., won first place in RC kits of powered vessels. (3) Spectator casts a critical eye at the Canadian Coast Guard Cutter "Simon Fraser, which placed Second in the Scratch Built-Powered category, by Daniel Cusson, Laval, Connecticut. (4) Battleship "USS Missouri," built by Mario Lanchi.

Nick Starace II, of Short Hills, New Jersey, followed with his classic model of the battleship "USS New Jersey."

One of the additions to the show this year was a small pond which was used to demonstrate some of the RC models. The pond was small compared to the ones found at the IMS shows and the Toronto Hobby show. It's too bad, because these large ponds would have permitted on-the-water judging for even the largest RC models. Having seen the impact that on-the-water performance has on judging at the Northeast Regional SSMA regatta in Massachusetts, I'd encourage this as a fundamental part of judging of any model entered as an operational or R/C ship model.

The support given to this event by the National Museum of Science and Technology was very impressive. The Museum was unexpectedly shut down over the summer to permit major renovations. However, the model exhibit had such support by the museum administration that they arranged to have the building open just for this event (anyone dealing with meeting halls and similar organizations will appreciate the difficulty they overcame). In addition to the Guild's models the Museum has a terrific exhibit of Canadian Coast Guard ships and a superb video display of Coast Guard ships at sea. Anyone visiting Ottawa should stop in at the Museum.

James E. Creighton, of Norwalk, Connecticut, won double honors, placing first in Static Scratch Sail and winning Best of Show with his full rigged ship the "Glory Of The Seas." James S. Wiser, of Southport, Connecticut, took second with his ship of the line "HMS Alfred." Another Connecticut Yankee, Leonard Brainsky, Bridgeport, placed third with a beautiful model of the "Constitution." Canadian modelers

took the honors in the Static Scratch Built (powered) models. First place went to Michel Rossignol, Aylmer, Quebec, with his sidewheeler "Chaudier." A stunning model of the Canadian Coast Guard Cutter "Simon Fraser" brought a second place prize for Dan Cusson, of Laval, Quebec. John E. Craig, Belleville, Ontario, earned third place with his outstanding model of the "HMCS Prince Robert."

When a club sets out to judge ship models, a small collection of fifty or sixty can be a formidable task. When the numbers climb over the hundred mark, the challenge can create a no-win situation. The first show took the peer review to judging, where the club used several modelers to judge the models on exhibition. The task, of course, is to be fair and to handle the show in such a way as to encourage maximum participation. The problem with the peer approach is the variability in judging skills and the general lack of experience in such matters by fellow modelers.

This year Bill Arnould, an accomplished modeler, Garth Wilson, Curator of Marine Transportation at the NMST, and Erling Stolley, a former officer in the Royal Canadian Navy and first rate modeler, were competition judges. They could be seen examining every model in the show to the closest detail.

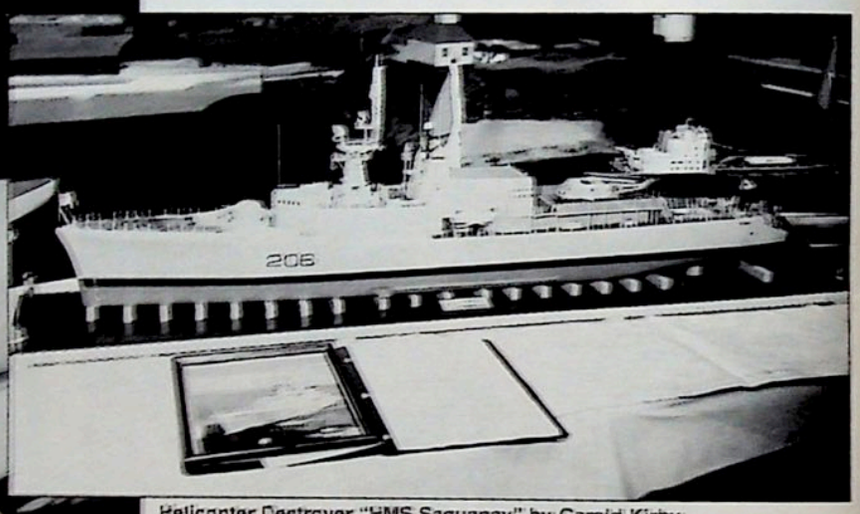
For modelers who may not be familiar with competition at this level, the judges look at documentation of the research behind the model, logs and pictures of the model under construction, and those things which enable them to evaluate the model beyond the modeling skills of the builder. Judging models at a major show is extremely difficult because some of the finest models in the world are in the competition.

Lou Hills, from Concord, Massachusetts, showed how it's done with RC kit built models by taking first place with his fantastic model of the tug "IMARA." Jens-Uwe Steinborn, Oxford Mills, Ontario, won second and third place honors with his tug "Mister Darby" and his German "E" Boat "WIESEL."

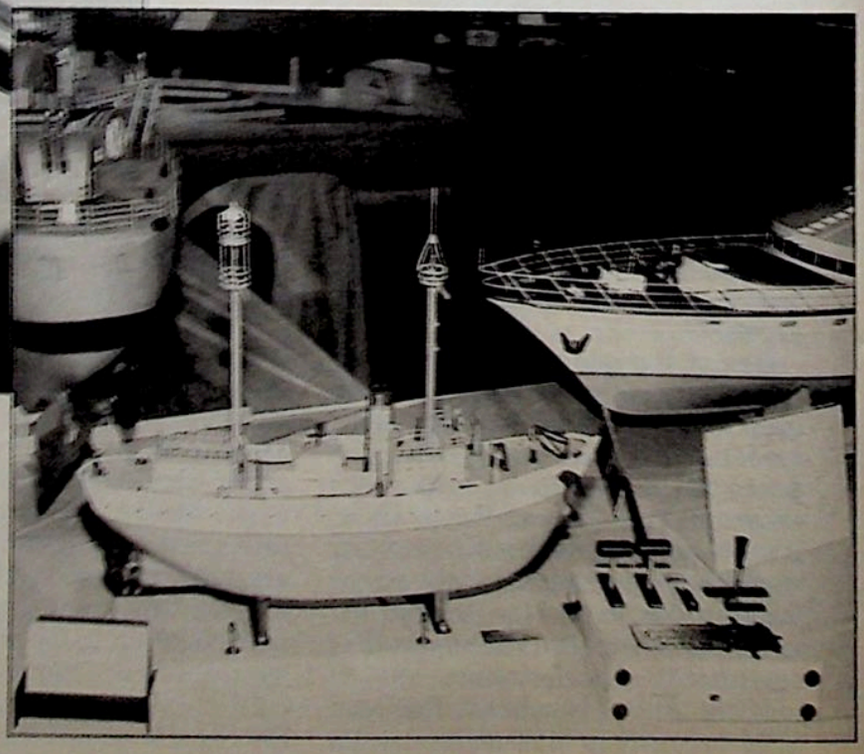
Aside from visiting Ottawa and looking at all the models on exhibition, the show gives all model builders a chance to swap notes, attend how-to talks by the best modelers in the country, and in general to enjoy seeing different techniques. The schedule included seminars on using two-dimensional drawing to build three-dimensional models, vacuforming parts, motor selection and gear drives for the scale powered models, photo etching, and plank-on-frame techniques.

There were so many goodies at which to marvel! A scale model of the "USCGC Campbell" had a five-inch

Bill Reynold's scale torpedo, with its drive motor and counter rotating props.



Helicopter Destroyer "HMS Saguanay" by Gerald Kirby.



Dan Sinstead packed many operational features into his tiny RC model of the USCG Lightship "Nantucket."

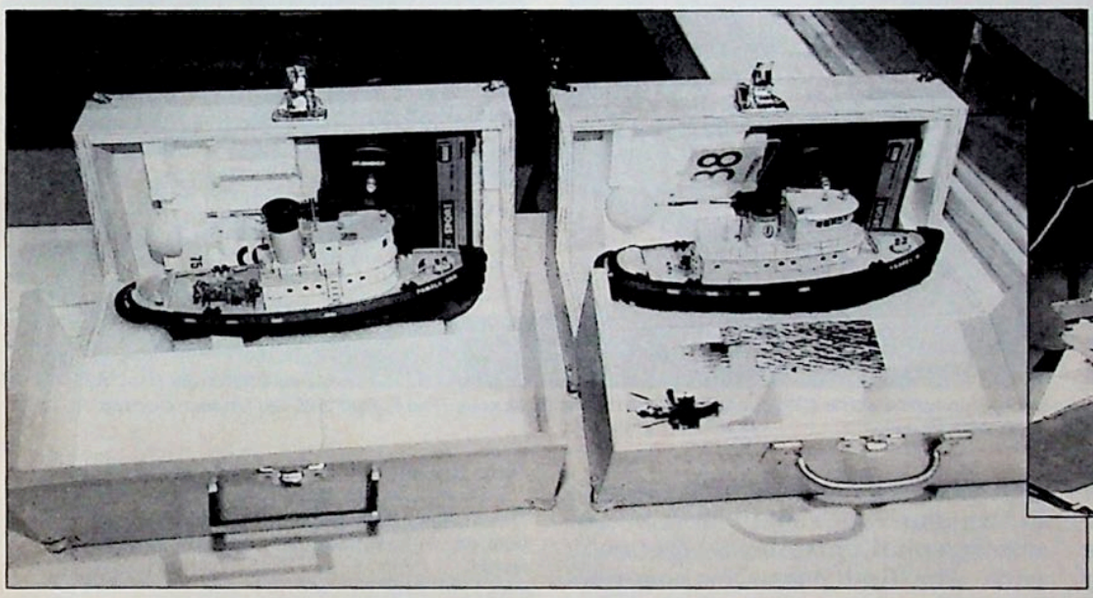
cannon that fired .22 caliber blanks and a depth charge rack that dumped charges off the stern. These actually sank and exploded! How often have you seen a miniature scale torpedo, the size of a cigar, with operating counter-rotating props?

This year, the appearance of many tiny scale tugs, life boats, and lightships, converted to RC by using one servo for the drive motor and another for steering, marks the beginning of a whole new category of Peanut Class RC ship models. This miniature RC fleet holds promise for a whole new movement in model boating, with fully proportional controls and multi-function details such as seen on the model of the Nantucket Light ship. Now you can join your kids at the pool with a fleet of tiny RC models.

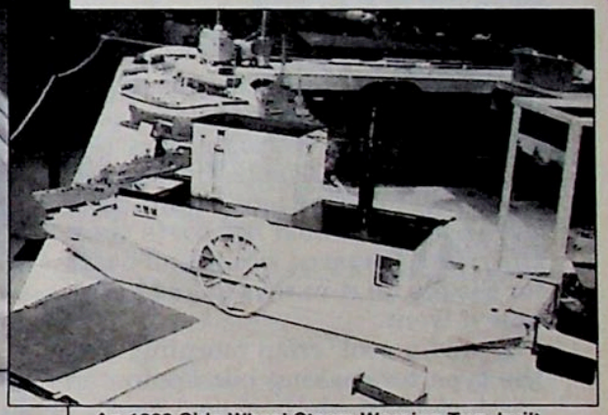
Don Ferguson, of Vancouver, didn't compete this year, however, his table was loaded with models and dioramas, including two of the finest working tugs I've encountered. The detail was absolutely perfect; the wheelhouse was fully detailed. If you're looking for ways to make operational scale meets interesting, Don's float camp barge, is a great place to start. He picked an actual barge which he built with styrofoam under the deck, but only around the edges, which allowed him to make it float at scale height (all of his dioramas are 1/32 scale). He included air vents to the space below the deck so the suction would break when you wanted to lift the unit from the water. There was also an outstanding diorama of a Canadian lighthouse complete with helicopter pad and landing quay that would be great on any scale course.

The show was well worth the trip! When you are making plans for your next vacation, consider visiting this show or any of the other major model shows in the US or Canada.

There is a lot of press being given to membership in NAVIGA and international model competition. There is really no need to get overly concerned about the attitude presented by NAVIGA. The folks across the ocean should be more concerned about taking part in the modeling world in the US and Canada. We have some of the greatest number of states and provinces in which to host exhibitions. We have the finest model builders in the world. We have model events of the finest quality which have participation by both the traditional static builders right along with equally fine operating scale ships and boats. The focus and energy of the modelers should be on supporting the efforts of the guilds and associations to build a network of world class exhibits in the US and Canada. We should be members of both the NRG and the SSMA. The world will come to us. •

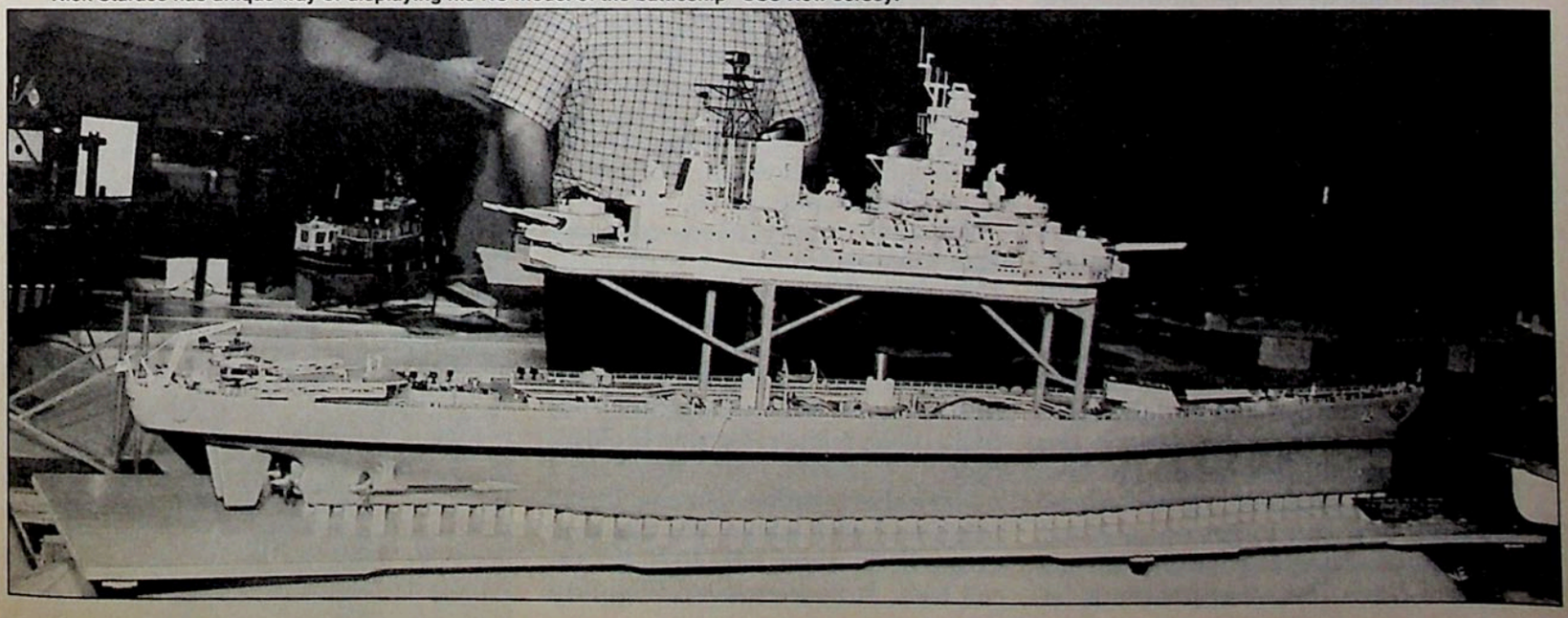


These two tiny RC tugs (see transmitters in cases), "Pamala Ann" and "Andrea M." were show stoppers. Tugs and compact carrying cases built by Bob Okerhol, Sharon, Mass.



An 1889 Side Wheel Steam Warping Tug, built by John Brook, Toronto. OK, what's a warping tug?

Nick Starace has unique way of displaying his RC model of the battleship "USS New Jersey."

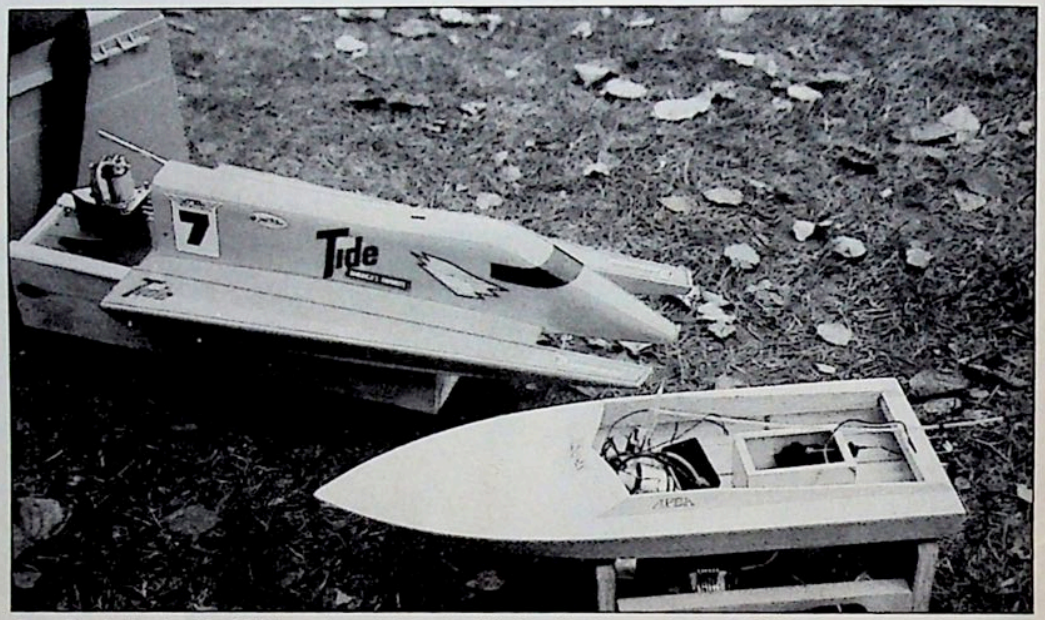


NEW RECORDS AT TIME TRIALS

BY DAVID FRANK

On October 20, 1990, I attended the Seattle Model Yacht Club's annual 1/16 mile straightaway time trials at Marysville, Washington. I had been looking forward to this event for some time. After seeing the outcome of the first APBA electric nationals, I knew there would be some very fast electric boats ready to compete for records, and in some cases, set new records.

Since winning at the nationals, Jim Auguston, of Pellingham, Washington, has been showing up at gas events with some new electric boats which he built for straightaway record runs. At these events, Jim amazed the spectators and contestants with the speeds of which his boats were capable. I prepared a couple of boats for the record runs myself and here's how it went.



Jerry Dunlap's electric OPC tunnel went 28 mph with 12 cells. The author's 05 Ski Cruiser clocked 30 mph with 12 cells.

It was a cool, crisp morning, just the type for making horsepower in gas powered model boat engines. But that was not necessarily the case, as the stars of the day would be the electric powered boats. Among the 10 to 15 contestants, most were there to set records in the new electric classes.

After fine tuning the APBA's sensitive infrared timing system, there was a little time for testing. This was used mostly by the gas boaters to get a needle valve setting.

The first to make a run through the lights was Jim Auguston. Jim has been known for doing well at straightaway events, as he holds several records for gas powered boats. Jim was well prepared for making a bunch of runs. He had three boats ready to go at the end of the course. John May, Jim's pit person, would launch the boats about 50 feet before the first set of lights. This would give the boat enough of a run to get up to speed without wasting any battery power. One of Jim's first attempts would be for the 12-cell modified hydro record. He was running a small streamlined outrigger built just for straightaway runs. His first pass was about 51 mph. The timing system missed his second pass, and as you have to make two consecutive passes for a record run, they had to take his third and fourth pass for an average of 41.4 mph. That was fast enough to beat the old record by 6 mph. Jim's boat used an Astro Flight 05 cobalt FAI motor, 600 mAH SCRs, and an Octura V 937/3 prop.

Jim next ran his seven-cell scale unlimited hydro for a new record in this class. He laid down two good passes for an average of 37.6 mph. Jim was running the "Boat," with which he won at the Nationals. It had an Astro Flight 05 cobalt FAI, SCR cells, and an Octura V 937/3 prop.

Jim's third run was for the 32-cell modified hydro record. He was running a little larger boat than his 12-cell boat. It had an Astro Flight 40

This 18-cell hydro, similar to the 40-powered boat, ran 61.2 mph with an Astro 05 FAI cobalt motor.

cobalt FAI, 600 mAH SCR cells, and a prop made in England at the Prop Shop. His first pass was a mind-boggling 65.4 mph. I think the boat had even more speed capability, as you could hear the motor picking up rpms as it went through the timing area. He ended up with an average speed of 61.78 mph.

To my knowledge, after doing some checking around, this was the fastest recorded speed for an electric boat to date, and I don't think Jim is done with this one. He went on throughout the day, changing motors and batteries in different boats, to set a total of 11 records in the hydro classes.

Jim set the six-cell stock hydro record with a scratch-built outrigger which had two Kyosho Monster Truck motors and twin V 937/3 props. This setup produced a speed of 29.4 mph average. He made a seven-cell stock run at 34.2 mph by adding a cell to his six-cell setup. Using his 12-cell boat with a stock motor, Jim ran 47.1 mph. He then put in 18 cells and ran 50.6 mph! This proved to be all the motor could handle, as it was in the meltdown stage when the boat came in to shore.

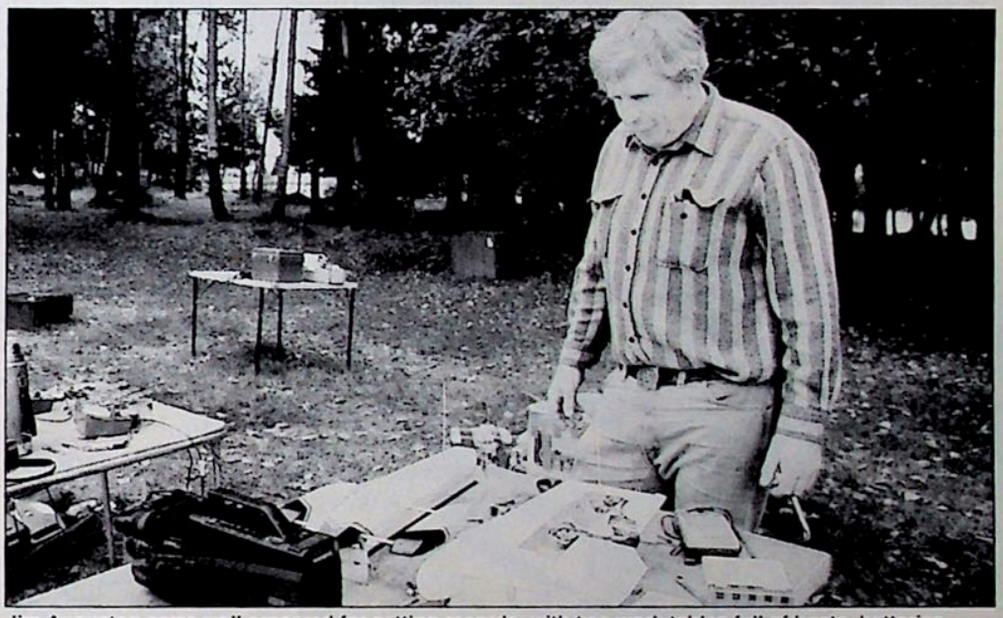
Jim's modified hydro runs in the six to 18-cell classes were all accomplished with an Astro Flight 05 cobalt FAI motor, and an Octura V 937/3 prop. His six-cell run was clocked at 33.6 mph. The seven-cell run was for a two-way average of 36.8 mph, and he amazed everyone again with an 18-cell run at 61.2 mph. Jim ran the larger boat with a 40 cobalt FAI and 24 cells at an average of 49.2 mph.

My congratulations go out to Jim on his well deserved records and for being the first electric boater, to my knowledge, to go over 60 mph. We now have some good records in the electric hydro classes to shoot for.

I set up a couple of boats to attempt records in the mono and OPC tunnel classes. The mono hull was a Dunlap-designed 05 Ski Cruiser (plans available through *USB&SM*). Running a 17-turn Twister Pocket Rocket, I made a run in the six-cell mono class at an average of 18.6 mph. I was using an Octura X 432 prop. My six-cell Modified run was made with a 15-turn Twister motor, 900 mAH SCR cells, and an Octura X 432 prop. This combination resulted in an average of 24.2 mph.

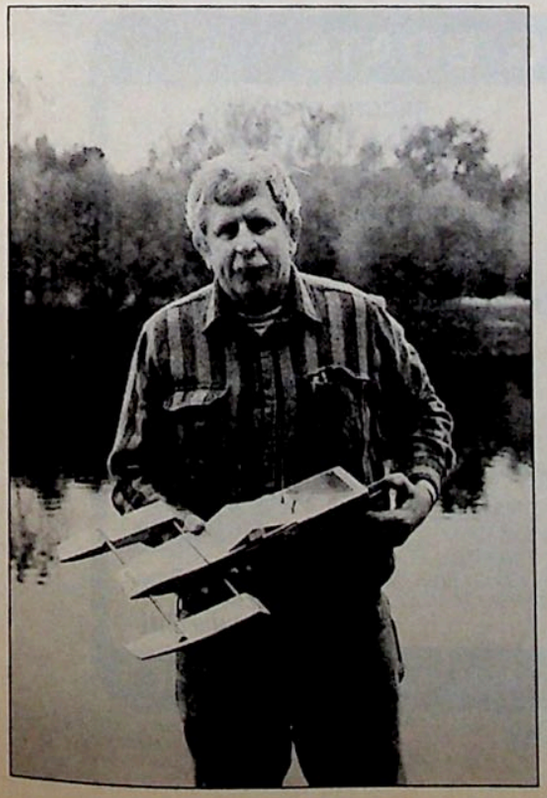
Other notable runs were made by members of the Electric Thunder Unlimiteds Club. Pete Schille, of Seattle, WA, running a stock Electric Thunder hull with 12 cells and an Astro Flight cobalt FAI motor, went 41 mph. Doug Filer, of Seattle, also ran a stock Electric Thunder hull. With seven cells he made a run at 29 mph.

Three records were set by gas powered boats that day. Ken Theimer, from Seattle, WA, ran a modified OPC tunnel for a new record of 51.499 mph. Russ Nachtweih, from Mt. Lake Terrice, WA, ran his 15cc hydro for a record of 79.816 mph. John May once again had one of his high tech boats which looked like something from a NASA wind tunnel. The canard-style hydro set a new record of 79.646 mph in the 7.5cc hydro class and John had an incredible single pass of 86 mph. This is extremely fast for a 7.5cc powered boat.



Jim Auguston came well prepared for setting records, with two work tables full of boats, batteries, chargers, and radios.

Still another Auguston hydro, this one with twin stock Kyosho Monster Truck motors, averaged 29.4 mph. Only problem was, it kept trying to run over and mash every other boat in the pond. Just kidding, Jim!



I made a run with 12 cells and an Astro Flight 05 cobalt FAI and came up with an average of 30.3 mph. I had seen this boat go faster and would hold off on applying for the records until the next record runs.

The OPC Tunnel I brought was run by my pit person, Paul Dunlap. The boat was designed by his dad, Jerry Dunlap, and was scratch-built from balsa. The motor was linked to a modified K&B 3.5cc outboard lower unit. Paul drove the boat with seven cells, an Astro Flight 05 cobalt FAI and an Octura X 432 prop through the lights at an average of 20.3 mph. With 12 cells the boat picked up speed to 28.2 mph. The motor was switched to a stock Twister 19-turn Pocket Rocket. With 12 cells, the boat did an average of 26.3 mph.

The perfect weather continued throughout the day and everyone made as many passes as they wanted. It was a very exciting day and I was looking forward to the next record runs in December.

I was unable to attend the December record runs, but Jerry Dunlap was there and gave me a short report on what happened. Jim Auguston was again ready to set some more records but because of the weather and some bad luck, he didn't do as well as before. He did manage to set five more records, however, this time in the mono and OPC tunnel classes. His seven-cell, open motor mono went 17.42 mph. Jim's OPC tunnel with

12 cells and a stock motor went 33.18 mph. The same boat with an open motor went 31.78 mph. Jim also upped the 12-cell open hydro record to 49.12 mph.

Jerry Dunlap has been doing some work with some monos. He ran his six-cell stock boat with a G.P. Marine Goldfire motor and an Octura X 432 prop through the lights for a record of 15.13 mph. The same setup with seven cells did over 18 mph. Jerry also set records in the 12-cell classes. With an open motor, he went 26.40 mph and the stock motor speed was 26.57 mph.

With increased interest in electric model boat racing, more RC car manufacturers are beginning to take a look at how they can enter the market. Electric model cars and boats have much in common. They use the same motors, batteries, speed controls, and radio control systems and frequencies. Plastic hulls can be made with the same production equipment as plastic car bodies. The explosion of RC car popularity in the '80s has caused fierce competition among manufacturers, which forced them to constantly improve their products, bringing the leading edge of technology into the hobby. These days it's not uncommon to see most of the drivers at an RC car race with microprocessor controlled battery chargers, speed controls, motor analyzers, and radio control systems. Battery manufacturers are coming up with new technology, as in the new Gates Millennium cells. I have heard these cells have typically 50% more capacity than normal NiCd cells. They also have no memory effects and contain no hazardous toxic substances. I hope to learn more about these new batteries and will let you know what I find out.

Jim Auguston with his record-setting outrigger hydro. It had a one-way run of 65.4 mph, and an average, two-way speed of 61.78 mph. These are the fastest known recorded speeds ever for electric powered model boats. Astro Flight 40 Cobalt FAI motor.

As the technology trickles from RC cars to boats, the speeds, run time, and reliability will be increased. This technology does not come without a price. Some of these high tech goodies can be very expensive and very complicated, which means you will have to spend more time (and money) with your hobby if you want to be in the competitive arena. But this can be said for any sport.

There are those who want to excel and will do everything possible to succeed. Then there are others who compete for the enjoyment of participation. I fall somewhere in between these areas. I also enjoy helping fellow racers with whatever ability I may have. I will always take time to help out the newcomer and will share anything I know about the hobby with anyone. You may also find me at the official's table, either directing a race, or just helping count laps or corner judging.

During the winter, I have been doing some indoor RC car racing. This is a good way to keep up on the latest stuff in electric racing. It also helps to improve on my driving/racing abilities. I mostly race 1/10 scale road and oval with an Associated 10L, but I occasionally race 1/12 scale with my Associated 12L, or offroad with my Losi JR-X2.

I am starting to organize the 1991 APBA Electric Nationals. This looks like it's going to be the premier event in electric boat racing. Jerry Dunlap began spreading the word at the Chicago Hobby Show and many manufacturers showed interest in participating in this event. If you would like more info on the APBA Electric Nats, write to me at 8907 34th Ave. So., Tacoma, WA 98409. That's all for now. Until you hear from me next time just remember to GO FAST, TURN RIGHT! •

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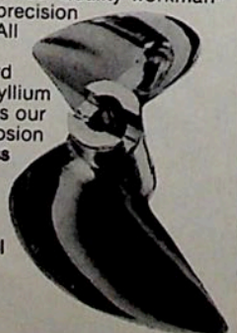

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LOG *Continued from page 27*

newsletter "Propwash" edited by Cathie Galbraith, caught our attention. Several 1/8 Scale Unlimited hydros were stolen in the Oklahoma City area on September 1, 1990. Although by the time you read this, as much as six months have gone by, possibly the thief may think it's now safe to bring them out in the open. The boats are: U-76, 1976 Miss Technicolor; U-30, 1982 Bud Light; and U-10, 1985 7/Eleven. All boats are fiberglass construction, powered by Rossi 65's, with Futaba 3EGX radios, on channels 5, 64, and 66 respectively. Also stolen were two OPS 45s, eight Rossi 65s, and four engines worth of spare parts. If any of these items are spotted, contact Dick Gaspari, 3550 S.E. Boulevard, Wichita, KS 67216, phones (316) 685-8611 or 683-3926.

APBA 1991 ELECTRIC NATIONALS

The biggest electric model boat race of 1991 will be contested July 6 and 7 at Wild Waves/Enchanted Village, near Seattle, Washington. This largest amusement and water park in the Northwest is just off Interstate 95, with food and lodging nearby. Racing categories will include hydroplanes, monoplanes, outboard tunnels, and sport hydro classes. Motor classes will be stock and open. Six, seven, and 12-cell battery classes will be raced, along with an "Unlimited Event" for any type of boat and number of batteries.

The event will be sanctioned for oval racing records by APBA, around a .10-mile oval for five laps in the heat racing. Twelve-cell stock tunnel will race three-minute enduros. Winners of classes with ten or more entries will earn APBA "US 1" patches. For more information, contact David Frank, 8907 34th Ave. South, Tacoma, WA 98049, phone (206) 588-9563.

OFFICE MATTERS

Three things to keep in mind when writing to *US Boat & Ship Modeler*.

1. Don't send subscriptions or plans orders to the Editor's attention! With the barrage of mail coming in daily for three publications, each goes into a designated pile. Orders get processed daily, but the editor's mail may sit in the basket for as long as several weeks if we're on a trip or involved in a trade show. Your order may be delayed unnecessarily if it goes in the editor's basket!

2. If you want a prompt answer to a question (please, nothing that involves time-consuming research, our brain power is limited), send an S.A.S.E. This way we can jot an answer on the bottom or back of your letter, and mail it right back to you as soon as we read it.

3. If you're looking for a rare plan, research material for documentation, out-of-production model parts, etc., send us a Classified Ad. If we don't happen to have an answer or know a source, some reader out there may be able to help. The Classifieds are strictly on a pay-as-you-go basis, though you can purchase an ad, in advance, for as many issues as you wish on a continuous run.

IRONCLAD

A new club for RC combat warships has been founded, and as can be guessed from the above title, it is based on ships of the Civil War. Naturally enough, the club's founder, Dan Rygasewicz, is calling it the Civil War Combat Club. The models are built to 1/48-scale.

Unlike later combat ships that fought some distance apart, with artillery that had much more range, the Civil War vessels fought at point blank ranges, as do the models. Also, ramming was quite a traditional battle maneuver in those days, and is therefore considered legal for the models!

"Ironclad" happens to be the title of the newsletter that Dan is producing for the club, and at least for the present, to help spread the word, the newsletter is available to anyone interested at no charge. The Volume 1, No.7 newsletter that Dan sent us contains seven pages, printed both sides, and contains lots of information about Civil War fighting ships of which many of us are probably not aware.

For more information about the club, and a copy of the newsletter, contact Dan Rygasewicz at 453 Buena Vista Ave., #204, Alameda, CA 94501. Although it's offered free of charge, we'd suggest helping the cause by including a couple of First Class postage stamps (29 cents apiece by the time you read this). •

RIGGER *Continued from page 31*

Top Fuel and 05 FAI cobalt motors with good results. Octura X 432 and X 435 props work very well with this boat. I have used 900 mAH and 1200 mAH SCR batteries. The 900s will save about two ounces and in most cases provide enough run time for a five-lap race. I don't feel they are absolutely necessary, as I can see very little performance gain over 1200s. The strut depth and angle shown on the plans will work well for most occasions. Allow your motor to cool down for 15 to 20 minutes and oil the bearings between runs. After a day's running, remove the shaft and lube it. Good luck and remember GO FAST, TURN RIGHT!

List of Manufacturers:

Astro Flight Inc., 13311 Beach Ave., Marina Del Rey, CA 90292.

Bru-Line Ind., P.O. Box 3786 Centerline, Ml 48015.

Du-Bro Prod., 480 Bonner, Wauconda, IL 60656.

K&B Mfg., 12152 S. Woodruff, Downey, CA 90241.

K&S Eng., 6917 W. 59th, Chicago, IL 60638.

Loctite Corp., 4450 Cranwood, Cleveland, OH 44128.

M.R.P., 18676 142nd NE, Woodinville, WA 98072.

Novak Elec., 128-C E. Dyer, Santa Ana, CA 92707.

Octura Models, 7351 N. Hamlin, Skokie, IL 60076.

Satellite City, 659 Laguna, Simi, CA 93062.

Twister Motors, 57 E. Arrow Hwy. Suite H, Glendora, CA 91740. •

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A GRAB-BAG OF NEWS

BY ROD CARR

Having devoted the last two issues to the Marblehead Class, there has developed a backlog of materials from skippers across the country that deserves publication. Without a unifying theme, just let this Spring column be referred to as "MISCELLANEOUS." We may discover some subject areas that hold special interest in this mixed bag of photos and commentary. If so, please let me know and we'll endeavor to explore them further in a future presentation.

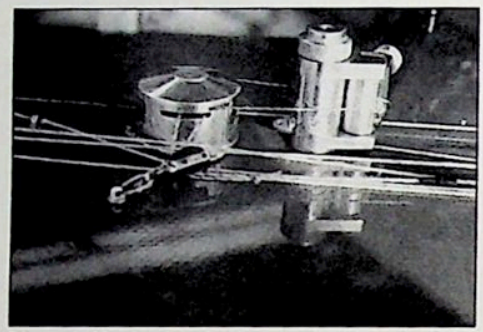


Photo 1: Mechanism for automatically opposing the jib from the main while on downwind leg. Photo by F.K. Ries.

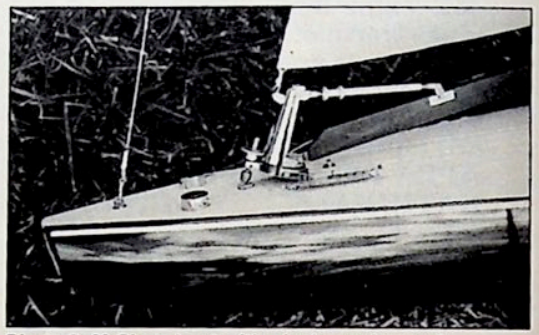


Photo 2: M-Class boat with nicely engineered radial jib swivel fitting. Chris Jackson photo.

PHOTO No. 1

Here we see a mind-boggling accessory which is apparently capable of sensing which side of the boat the main boom is on and then swings the jib out to the opposite side when on a downwind run. A version of this, called the Butterfly, has been used by J. Walicki, who took third place at the IYRU-MYRD World Championship held at Fleetwood, England in August 1990. I learned of this from Chris Jackson, editor of *Model Yachting News,* a quarterly for which you can obtain a year subscription by sending $20.00 directly to Chris at 5 Malvern Court, Abbey Road, Malvern, WR14 3HG, ENGLAND.

PHOTOS No. 2 & 3

Chris also sent some negatives of other M-Class boats and a pair are reproduced here. Both of these are of European M's and show the high standard of construction that is typical of their fleets. Of interest is that both of these boats are using forestays in addition to the jibstay upon which the jib luff is sitting. With all the fiddling in the US with topping lifts and offset swivels, one might pause for a moment and think about letting a forestay from the jibstay attachment point on the mast carry the load, leaving the jibstay tension adjustable and independent of the mast bend loadings. Note that both of the jib swivels can have their angle changed to match the jibstay angle of varying suits of sails. Something to consider when putting together a radial swivel for your boat.

PHOTOS No. 4 & 5

American skippers are experimenting with an entirely new boat built to resemble the full-sized America's Cup Class. I hesitate to use the term "International" as that term denotes recognition by the International Yacht Racing Union—Model Yacht Racing Division. But should the class grow and spread, there is always the

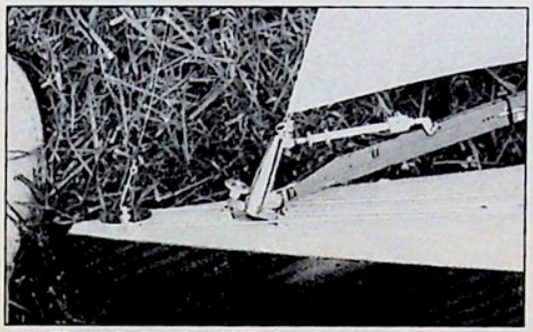
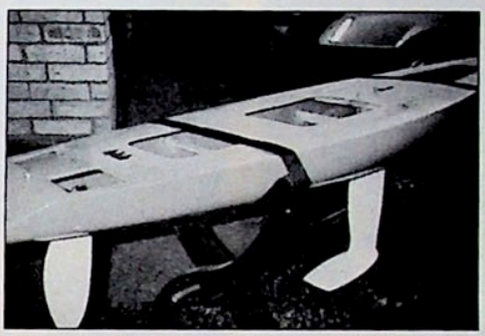


Photo 3: Another "M" showing use of dropped club and compression vang. Chris Jackson photo.



Photos 4 and 5: Interesting keel and bulb shape on new America's Cup class boat. With a 75" LOA and a 96" mast, your little old VW will have to be traded in! Cradle/stand produced by Byron Originals.

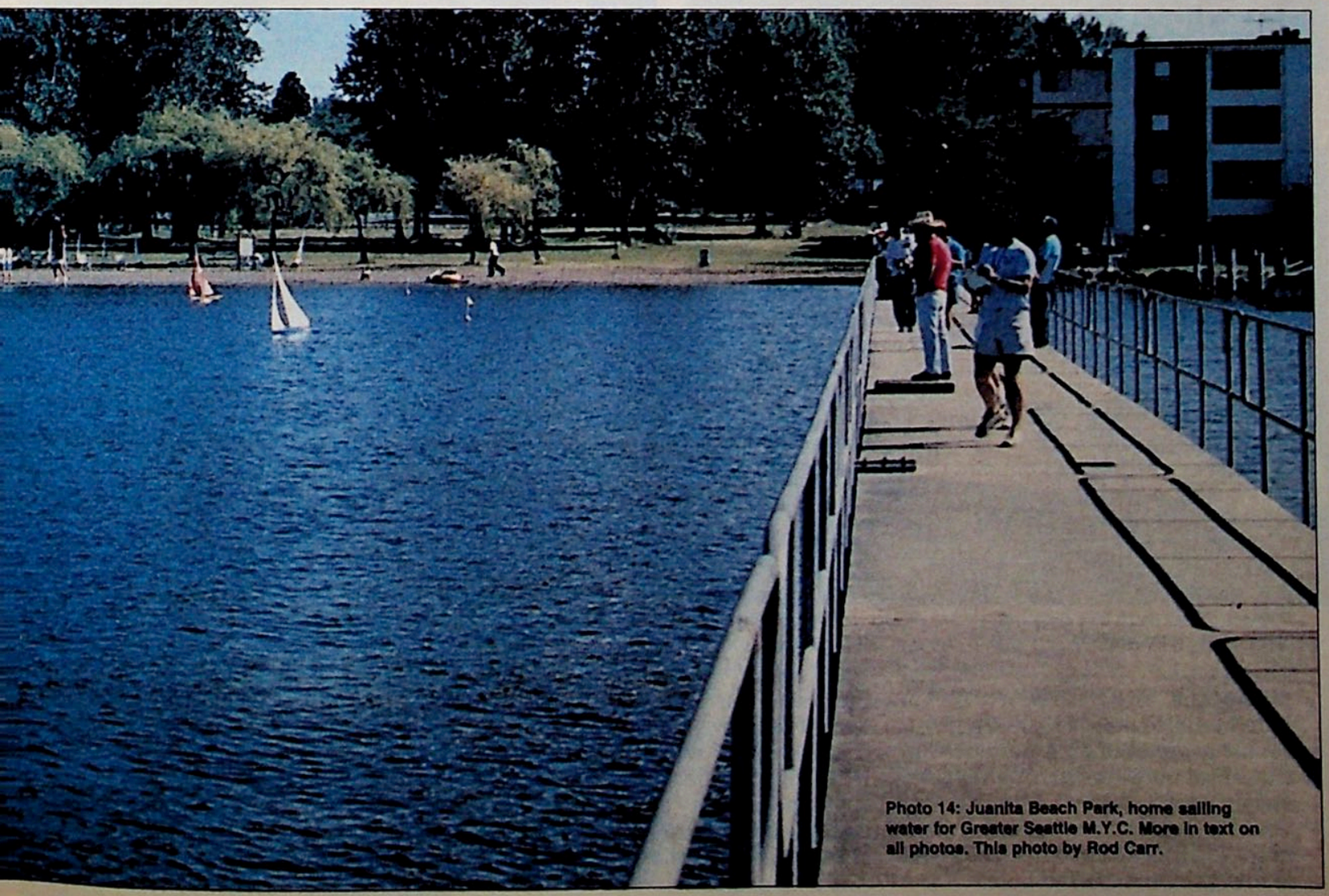


Photo 14: Juanita Beach Park, home sailing water for Greater Seattle M.Y.C. More in text on all photos. This photo by Rod Carr.

opportunity for it to be adopted as a new International Class. Nevertheless, a rather complicated mathematical rule and measurement procedure is producing boats of approximately 70 to 75 inches with eight-foot masts and approximately 1800 square inches of sail area. This is something a bit bigger than a Santa Barbara, as the beam measurements are in the range of 16 inches, with displacements in the 23 to 27-pound area. Genoa jibs are allowed. A couple of hulls are available, and designers are said to be turning out other responses to the rule. I've seen a video tape of the "BOOGEYMAN" design in light air. Photos No. 4 and 5 give a couple of views of an America's Cup Class boat under construction by Glen Comer, 4802 Broken Elm, Spring, Texas 77388. Certainly plenty of room in the hull, and free rein can be given to design of the fin and bulb.

PHOTO No. 6

This is one of those rogues gallery shots that needs to appear from time to time to keep the subjects from getting too stuffed up with their own self-importance. Captured in a "quiet" moment at the AMYA East Coast 12 Meter Annual Class Championship Regatta (why don't they call it the National Championship?) held in early June in Kewanee, Illinois, from left to right we see Rich Matt, first AMYA President and sometime banana republic dictator; Dick Hein, AMYA Founding Father and AMYA President; and finally this columnist, who was AMYA's first Secretary/Treasurer. Of the original "Chosen Nine" who founded AMYA in 1970, we believe that this represents the majority of the plank holders of the 20-year-old organization. It was a good reunion, and one that was long overdue.

PHOTO No. 7

Noticeably absent from published description of American boats are methods for RC adjustment of various aspects of the rig while underway. This European M-Class boat has the capability of changing the amount of camber in the lower 1/3 of its mainsail by moving the outhaul of the mainsail. The outhaul runs forward to the mast then down inside the boat to an ordinary RC servo. The trick here is to pre-calibrate the system so that you know what the camber is for any given setting of the non-centering transmitter stick. On the high aspect M-Class rigs, it only takes a little bit of adjustment to drastically change the shape of the sails. One needs to make changes that are predictable and can be related to improved performance in a reproducible way. Simply being able to pull on every corner of every sail

Photo 6: Rich Matt, Dick Hein, and Rod Carr (l to r), founding fathers of the American Model Yachting Association. Glen Comer photo.

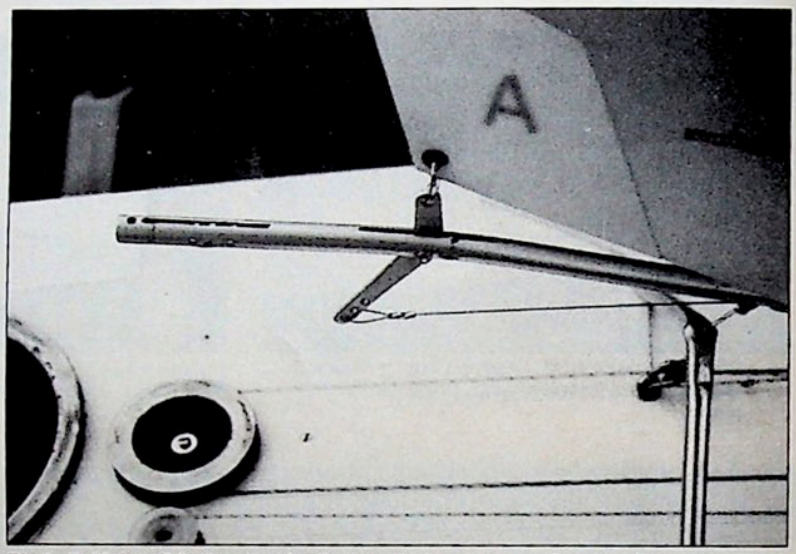


Photo 7: Mainsail foot outhaul adjustment sets amount of mainsail camber by RC. Photo by Chris Jackson.

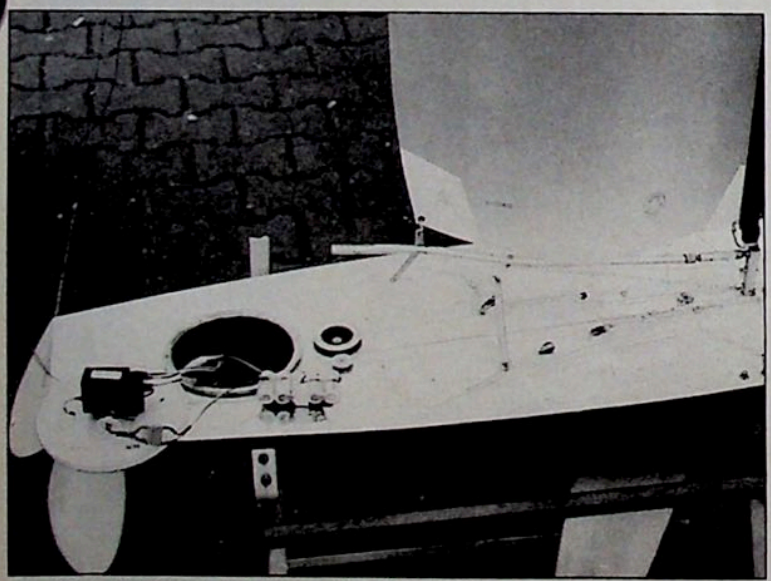


Photo 8: Clever hatch idea seals hull and carries receiver high and dry, just under deck. Jackson photo.

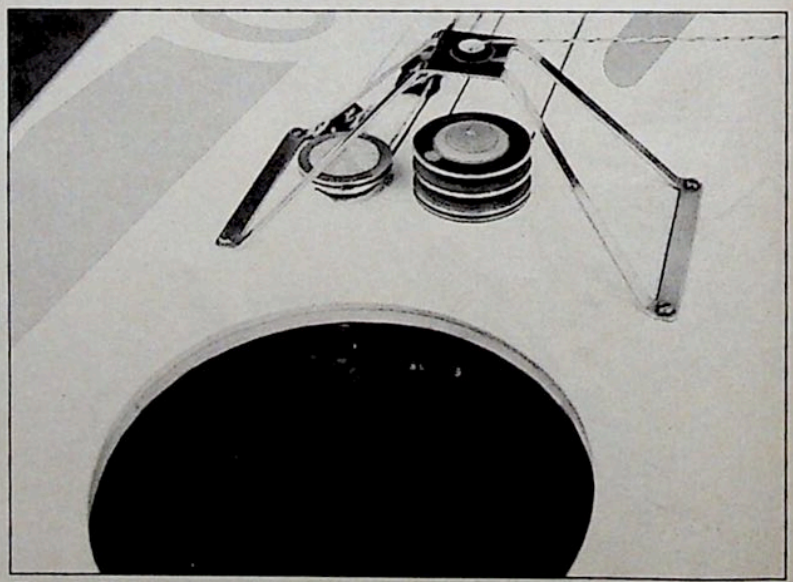


Photo 9: Deck-mounted drum winch on M-class "Amigo." C. Jackson photo.

while underway is not a guarantee of success. The following photo shows that initial adjustment of the camber is by rotation of a screw fitting at the forward end of the main boom.

PHOTO No. 8

Same boat with a somewhat wider view, showing a very clever idea for the radio installation. The deck coaming has been constructed to fit one of those plastic snap lids that we find on margarine tubs in this country. The receiver is mounted on the underside of the lid, keeping it dry and holding the critical wiring connections up out of any stray water which enters the hull. Note the deck-mounted drum from the winch just forward of the hatch with the sheet

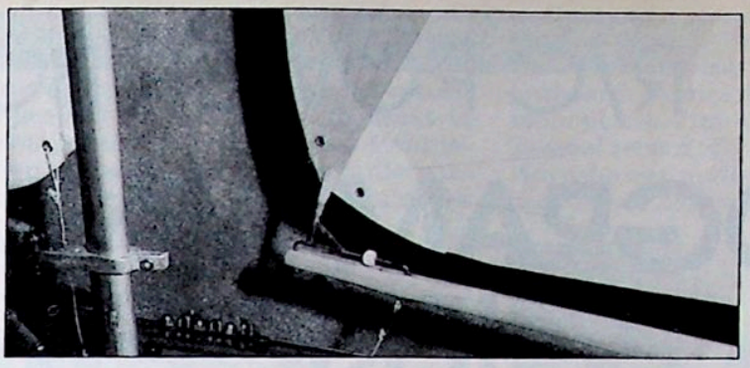


Photo 13: Maury Thoreson-designed outhaul control system. Allows one-hand adjustment. Rod Carr photo.

does not stay parallel with the boom, but rotates faster. This capability proved to be the secret to the Una-rig rigging and blocks above deck under the main boom. The sheet horse puts the sheet guide directly beneath the main boom when closehauled. This makes optimum use of the center sheeting arrangement without having complicated travelers.

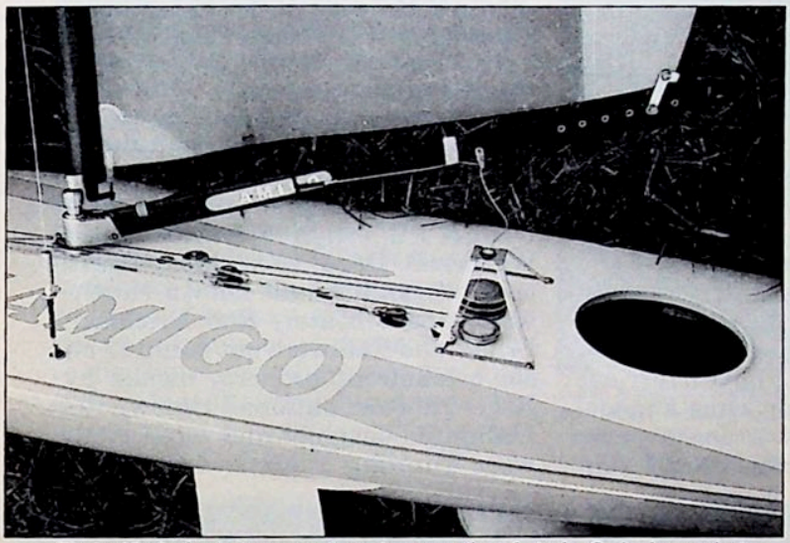


Photo 10: Amigo's boom and mast are worthy of study. C. Jackson photo.

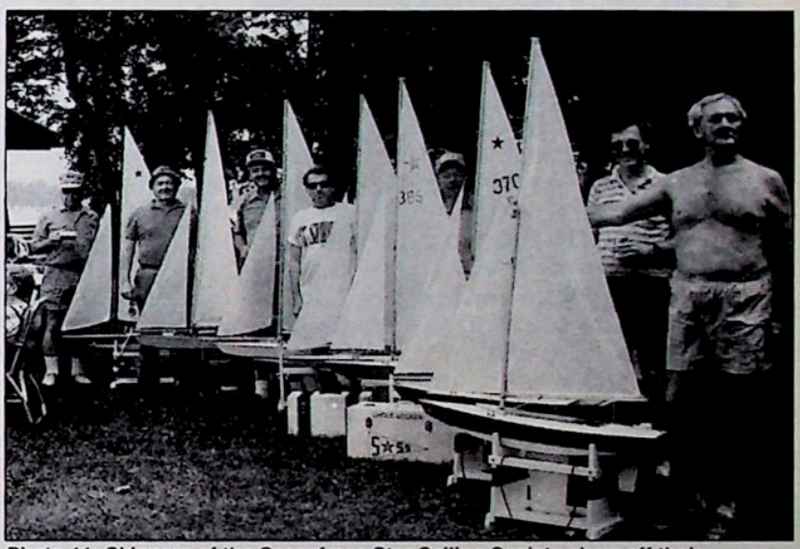


Photo 11: Skippers of the Sassafrass Star Sailing Society show off their Star 45 One-Designs. E.R. Bradley photo.

PHOTO No. 9

Another M-Class, named "AMIGO," with winch drums on deck and sheet guide elevated to almost the height of the underside of the main boom. Hard to see, but RC gear and servos are mounted directly underneath the deck in this boat.

PHOTO No. 10

A somewhat longer shot of AMIGO provides some interesting food for thought about handling main booms. Notice that the boom is fixed into a swivel mechanism and that the mast rotates with the boom. This provides for a much cleaner leading edge to the mainsail. Careful scrutiny leads me to believe that the mast is over-rotating, i.e., its fore and aft axis

Photo 12: E.R. Bradley's Star 45 and custom tool box. Nice, professional looking color coordination. Bradley photo.

"BONE" that I sailed in 1979. With the mast over-rotated, the rig developed significantly more power than with passive mast rotation. On the BONE the system was dynamic with a servo doing the job, the system in AMIGO may be such that no servo is required. Definitely the way to go. Twist in AMIGO's mainsail, is apparently controlled by the swiveling mainsail clew fitting which looks to be controlled by a line to the end of the boom which turns in toward the swivel point of the boom.

PHOTOS No. 11 & 12

Believe it or not, there are other one-design classes being sailed in competition. E.R. Bradley of 2551 Old Springfield Road, Tipp City, OH 45371, was kind enough to send pictures of the local fleet. From left to right we see J. Collier, N. Rhodes, T. Wilkins, J. Maxson, E. Bradley, a guest, and B. Dunnam. A close inspection shows most of the mainsails to be rigged by attachment of the sail foot all along the main boom. This follows prototype practice, but flattens the sail near the boom. The class

continued on page 46

PROGRAM WINS RCMB'S 'TV JERK' AWARD

BY JERRY DUNLAP

WORLD'S NOT SO FUNNY HOME VIDEOS

Was I the only model boater watching *World's Funniest Home Videos* the other night when host Bob Saget said, "And here's some hilarious videos of people having fun with their toys." I recall the opening video showed a little girl sitting on a plastic tricycle. The youngster gives the little vehicle a push and it collapses in a bunch of pieces leaving the girl with a rather shocked expression on her face. Boy, that's great humor . . . a broken toy and a little girl crying.

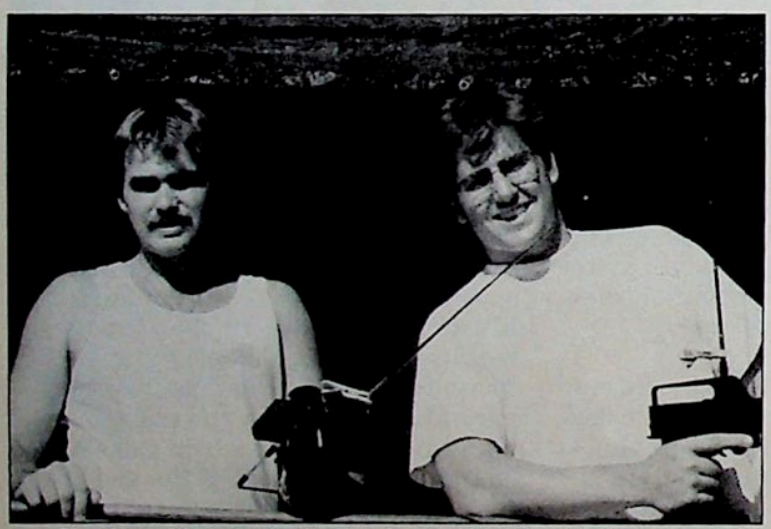
The next video shows a model hydroplane zipping across a pond somewhere here in the good ol' US of A. Looked to me like it was some type of fiberglass Sport 40. The boat came down the backstretch, around the right turn, and headed down the front straight. Nothing very funny so far. Then the funny part happened. The Sport 40 smacks right into an aluminum pickup boat containing two occupants. The video ends with a gut-busting scene of a couple of guys attempting to extract the model boat embedded into the aluminum boat.

I personally have a difficult time seeing anything funny about that particular video. For years, many dedicated people in all our major model boating organizations have worked very hard to demonstrate our sport/hobby as a low-risk activity. When millions of viewers see what could have been a potentially serious accident involving a model boat, I don't believe this is positive exposure for our hobby.

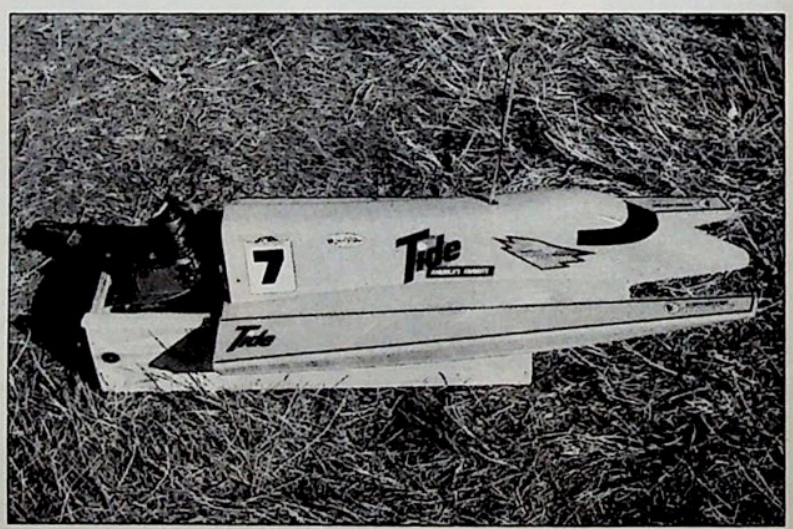
From personal experience, I know how dangerous it is to have a retrieve boat out on the water when a model is being run. About a dozen years ago, during a practice session, I went out in a wooden boat to retrieve a boat that had quit out on the course. A new model boater I was helping fired up his 3.5 outboard tunnel and began running while I was still on the lake. The new model boater misjudged my position and struck the retrieve boat. Both sponsons of the 3.5 tunnel punched through the side of the retrieve boat. Luckily, the model hit the boat about three inches above the water line and no water entered the retrieve boat. I returned to the beach with the model protruding from the side of the chase boat. Surprisingly, the model boat wasn't hurt in the slightest . . . the paint wasn't even scratched.

An even more serious model boat collision involving a retrieve boat occurred back in the late '70s when Frank Ward, designer of the DragN'Fli hydroplanes and Wardcraft Deep Vees, hit a chase boat containing well known Northwest model boater, Ron Erickson. Frank and Ron were out running on some lakefront property owned by Roger Newton, nationally known RC Unlimited designer and racer. Both were running their hydros when Ron's quit and he rowed out to get it while Frank continued to run.

Certainly it was unintentional, but Frank inadvertently hit the chase boat carrying Ron and punched a hole right at the water line. The chase boat began filling with water and Ron was still quite a distance from shore. Ron began rowing towards shore, but the boat filled with water, swamped, and dumped Ron in the water while he was still a few hundred feet from shore. Ron was wearing his



Electric model boat racing is gaining credibility with nationally recognized car racers Jay Halsey (l) and Butch Kleober, who participated in the 1990 APBA Electric Nationals.



An electric powered version of Jerry Dunlap's tunnel design took second in 12-cell Open Tunnel at the 1990 APBA Electric Nats.

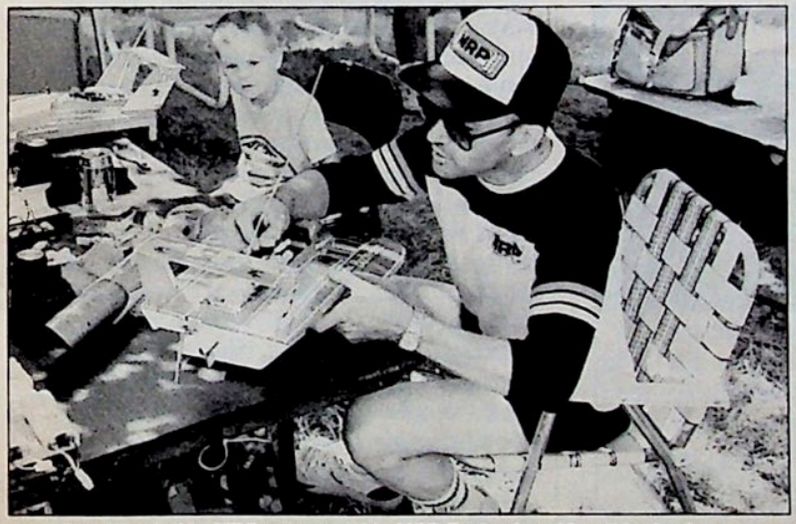
hip waders, no life vest, and to top it off, Ron is a non-swimmer.

Realizing Ron was in a life threatening situation, Frank jumped into the lake, swam out to where Ron was struggling to stay afloat, and managed to pull him back onto the shore. Other than both getting wet and very cold, neither Ron nor Frank experienced any physical harm from what could have been a tragic model boating accident.

So, when I see something like the "Model Boat Smashes Into Rowboat" sequence on "American's Funniest Home Videos," I don't see anything at all funny about such an incident. It was bad enough this incident made the premier show of the season, it has also been shown as a rerun.

It is some consolation knowing all the model boat organizations now have safety rules banning the use of a retrieve boat if there are boats being run on the water. Unfortunately, most model boaters do not belong to a national organization and incidents like the one seen nationwide could happen again. The guys in the retrieve boat probably don't realize how lucky they were that one of them wasn't seriously injured. The lesson to be learned is a simple one . . . DON'T GO OUT TO GET A MODEL BOAT UNTIL ALL BOATS HAVE STOPPED RUNNING!

(Left) A slightly damp Jim Auguston holds his APBA record holding 6-cell monoplane and 7-cell/12-cell record holding tunnel. Both boats are original designs by Jim. Picture taken at December record trials, Twin Lakes, WA. It rained the whole day. (Right) Jim with his record holding 12-cell/18-cell original outrigger hydro. Astro Flight 05 FAI provided the push.



Bob Welch, Mr. MRP, prepares his MRP Budweiser 12-cell hydro for competition at the 1990 APBA Electric Nats. Aaron Stewart, son of APBA R/C Racing Commission V.P. Wally Stewart, observing.

Why is *USB&SM* contributing editor David Frank smiling? He installed foam in the front of his balsawood constructed Dunlap 05 Ski Cruiser. When boat broke apart during a violent flip, it remained afloat. Dave now recommends using fiberglass covering with balsawood. Hmmm . . . Wonder why?

FAST ELECTRIC BOATS THAT ARE REALLY FAST

For many gas powered model boaters, the term "fast electric" is one of those double speak terms like "dry rot," "Army intelligence," and "some assembly required." However, on October 20 of last year, Jim Auguston did something no other model boater had ever done before.

Jim, who already holds numerous APBA speed records for gas powered boats, drove an electric powered model hydroplane to a world record speed of 61.788 mph. Jim's feat is comparable to when Roger Bannister broke the four minute mile barrier for running. Prior to Jim's 60+ mph run, no one had even exceeded the 50 mph mark for electric powered model boats. Jim went right past the 50 mph barrier with an original outrigger hydroplane using an Astro Flight 05 Cobalt FAI motor running on 32 cells. Jim also had a 61.266 mph two way average using 18 cells in the same boat.

In December, Jim established a 12-cell record of 49.126 mph with the same outrigger hydroplane and an Astro 05 Cobalt FAI. At the December record trials, Jim also established records with an electric powered outboard tunnel boat and inboard monoplane. Jim set a 12-cell Stock Tunnel record of 33.185 mph using a Koyosho car motor. Using the same boat/motor combination and a 7-cell pack, Jim went 23.06 mph. Using an original design 18-inch monoplane, Jim established a 6-cell Open Monoplane record of 20.160 mph. The motor for this monoplane record was an Astro 05 FAI. An interesting note on Jim's monoplane record; the boat was built four days before the event and run for the first time at the record trials. All of these records were established on a photoelectric timing system and were two-way averages

continued on page 47

SAIL *Continued from page 43*

requires dacron sails and I certainly like the look of the fleet.

The second photo gives a good impression of the large main/small jib sailplan of the "STAR." My experience is that the boat is nimble, points extremely well and is a good performer in light air, with exciting performance in the heavier stuff if you can keep her under control. Bradley's boat and custom toolbox show a polished, professional image. I like the white bottom paint, as it makes reading the boat's heel angle easy on any point of sail. The club burgee is unique and prominent on the tool box.

Mr. Bradley asked if I would do a column on trouble-shooting radio problems. I have to defer, for I know just enough about radio to remember to charge the batteries, find the on-off switch, and once upon a time passed the test for an Amateur Technician's Class "Ham" license. *(We'd suggest that questions on trouble-shooting radio problems be addressed to our "Radio Waves" columnist, Eloy Marez, 2626 West Northwood, Santa Ana, CA 92704. Include an S.A.S.E. for a quicker reply. wcn)*

PHOTO No. 13

Always searching for reliable, simple, and easy-to-adjust fittings, I have used this kind of outhaul fitting on my EC/12 for almost a year. Invented by Maury Thoresen, of Marysville, Washington, a bent music wire track sticks into the boom like a wide croquet wicket. I push it all the way through the boom and put a blob of solder on each leg just for insurance. A triangle of square brass tubing is soldered up with the vertical leg drilled out and threaded to receive a piece of 2-56 Kwick Link. The brass slides on the music wire, with a tight, friction fit teflon button as a stop. The clevis is screwed onto the 2-56 threaded stub and can be run up or down to adjust the amount of twist in the jib leech. The only thing not shown in the picture is to add a clevis keeper (a short piece of fuel tubing) to prevent the clevis from opening up and letting go of the jib. When tacking, the sail shakes and can sometimes be violent enough to open the clevis. Out of sight on the other side of the boom is a millimeter scale which allows me to reset things exactly as before. The jib exit has been since simplified with the substitution of a brass exit guide from A.J. Fisher, 1002 Etowah Ave., Royal Oak, MI 48067.

PHOTO No. 14

Looking toward the beach at Juanita Beach Park, Kirkland, Washington, home sailing water for the Greater Seattle MYC. Behind the photographer is six miles of open Lake Washington, providing unobstructed access for the typically southerly winds that dominate the site. Boats sail inside the concrete elevated walkway in water that is approximately four feet deep. Walkway allows some waves from the lake to enter the sailing area, providing a range of wind and wave conditions to be dealt with over the season. Nearby, a fish & chips restaurant, barbecue area, snack bar and restrooms provide a pleasant setting for the family.

Thanks to all who provided photos, especially Chris Jackson from the United Kingdom.

In the fall issue of *USB&SM*, Glenn Chalder, my successor as AMYA EC/12 Class Secretary, took issue with statements of my opinion which have appeared in this column from time to time. Any column has some percentage of personal viewpoint to it, even if only in deciding what to write about in the first place. I urge anyone with opinions that differ from mine to take the time to write to the editor. It is a way of returning something to the sport and is really everyone's responsibility. If you don't provide input, then new rules may be put in place without your comments. While I do not agree at all with Glenn's comments, I will valiantly defend his First Amendment Right to make them, and I applaud the effort that he put forth. *(We support Carr's latter statement, otherwise his comments, and Chalder's rebuttal, would not have appeared in print. As for the readers who telephoned to complain about our printing the material, we asked you to write in with your opinions, but you didn't. That puts you in the "let George do it" category. wcn)*

While you have your pencil and paper out, send your 1991 dues to the United States International East Coast 12 Meter Class Owners' Association. This group is the national sanctioning body for the International configuration of the East Coast 12 Meter Class. Make the check out for $10.00 payable to: Ron Banner, 115 - 17th St. SW, Puyallup, WA 98371.

Your comments on anything and everything nautical are always welcome either to the editor or to: Rod Carr, 3011 - 177th Ave., NE, Redmond, WA 98052. •

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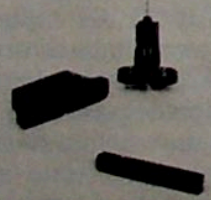

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WAVES *Continued from page 22*

thing connected prior to any previous position would be momentarily turned on or off, when the switch is moved to any desired position. If this is not acceptable, connect a normally closed switch (SW2), either pushbutton or toggle, as shown in Sketch 5. It will then keep the servo at full throw in one direction regardless of the selector switch (SW1) position (think of it as an Off position), allowing you to select a given position and trigger it with SW2 as desired.

In some transmitters, operating these added switches might cause a slight glitch, a bump, on one or more of the other servos. If so, a .001 ceramic capacitor added from the active switch contact to the switch case should eliminate it.

Your first question will be: Will this work with the retract gear channel and if not, how can I do something similar with it? The answer in both cases is, sometimes! You will find that all proportional channels are connected and work as described. However, there is a wide difference in retract channel switching. Some do work as described above, others merely ground an IC pin, and use only two connecting wires. If your retract channel uses three wires to the switch, you might try connecting a 5K pot in its place. If you then get proportional channel operation, chances are that this method of channel separation will work.

Now for the warranty! In most cases, this kind of modification will kill it. And in some cases, the maker might not even service your transmitter unless it is allowed to return it to its normal configuration. Therefore, if at all possible, install all changes in such a way that you can return the transmitter to its normal configuration prior to sending it in for service. As to expected malfunctions, modifying the one channel as described is not going to cause any problems with the other channels, operating distance or glitching. If they do occur later on, they are caused by something else and not your modifications.

Try it . . . as stated earlier, if you record how the wires came off the switch originally, you can always replace them and get back to normal if things don't work out exactly as you expected them to.

Incidentally, a good source of inexpensive, small micro-switches is All Electronics, P.O. Box 567, Van Nuys, CA 91408-0567; (818) 904-0524. The catalog is free. You may also want to investigate the "Switch Box" from Ace RC; a simple servo pushrod operated Micro-Switch mount which greatly simplifies installations such as these. Ace R/C is at P.O. Box 511, Higginsville, MO 64937, (816) 584-7121; the Switch Box is No. 60K31 at $4.95. There are other ways of making similar changes, up to and including the Vantec multi-channel type of operation. If any of you have made them to specific transmitters, please let me know what and how in detail. I will arrange to share them with fellow boaters who are interested. And if you do write in with a question, be assured that you won't have to wait until the next issue of *USB&SM;* I generally get an answer off long before that time, and only those letters of general interest get published. An S.A.S.E. with your questions would be appreciated.

Eloy Marez, 2626 W. Northwood, Santa Ana, CA 92704. •

POWER *Continued from page 41*

over a 1/16 mile distance.

In my opinion, we are going to witness a change in model boat racing similar to that which occurred in model car racing. Fifteen years ago, model car racing was primarily focused on gas powered cars. Electric model cars were just beginning to make their appearance. There was very little in the way of organized electric racing. Most of the current electric car manufacturers and suppliers weren't even in business in the mid-'70s. Today, while there is still plenty of interest in gas powered cars, there is considerable more interest in electric powered cars.

Electric model boat racing will never replace gas powered model boat racing. However, by the year 2000 (and that's only nine years away) I believe there will be at least as many electric boat races as there are gas boat races. It will be possible to conduct electric boat races in areas where gas boats will never be allowed to race. Electric model boating will appeal to more people because it is just easier to do than gas powered.

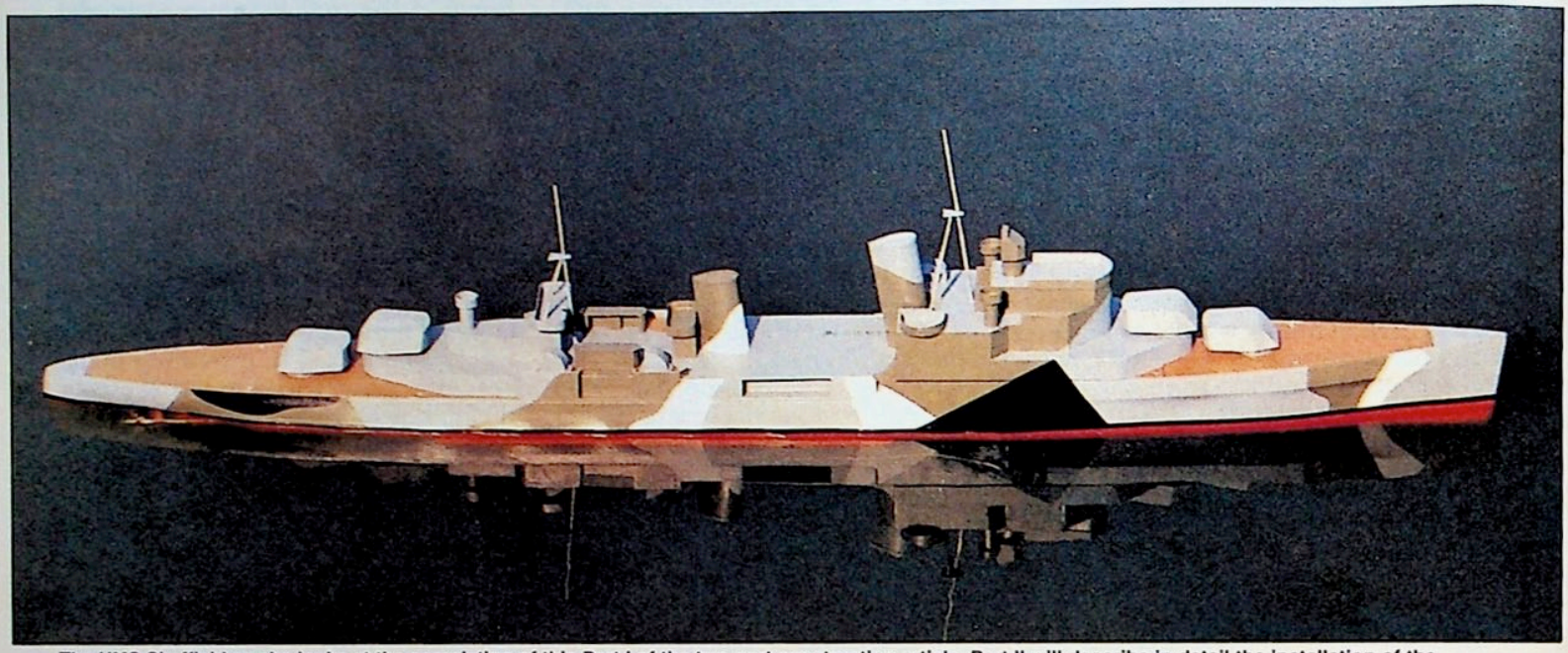
I have no data to support the following belief, but I think total sales of electric model boats now surpasses sales for gas boats. This is understandable from a marketing standpoint because most electric model boats are sold ARF; Almost Ready to Float. And it is the marketing of electric powered boats that will make them the boat of choice in the future. Check and see who's purchasing the full page color ads in the model magazines. In the major discount catalogs, check out what kind of model boats are being given premium exposure. It's not the gas powered boats. Some of the major names in model cars, Parma and Trinity, to name two, are now offering products for electric model boating. Octura Models, a pioneer in making quality products for gas powered model boats, now offers a complete line of propellers and hardware for electric boats. Prather Products is seriously looking at entering the high performance electric boat market. Astro Fight, a leader in high performance cobalt electric motors for aircraft, is definitely committed to providing boaters with motors and speed controls for high performance applications.

The biggest problem with many of the electric boats now available is that their manufacturers do not take into consideration many of the performance features used on gas powered model boats. However, as more performance-minded model boaters become involved in electric boats, there will be an upgrading of equipment and hulls available for electrics.

Although I've designed a successful electric model boat and reviewed a few electric models, 1990 proved to be a pivotal year in my involvement with electric boats. A big part of this involvement revolved around the 1990 APBA Electric Nationals. It was this event that really opened my eyes to the potential of model electric boat competition.

Another electric project that really grabbed my attention during the last part of 1990 was the challenge to develop my 05 Ski Cruiser so it could be manufactured in ABS plastic by a leading model aircraft manufacturer now becoming involved with model boats. What is especially exciting about this project is the possibility of having a production electric model incorporating features that have proven successful on gas powered model boats. The goal of this project is to offer a single-motor, 6-cell powered, entry level electric boat, easily upgradable for better performance. This type of model would be a step towards having well-designed model electric boats that are fairly inexpensive and basically ARF.

For model boaters with high nitro fuel coursing through their veins, the term "fast electric" will probably always be a misnomer. However, I think the last decade of the 1900s will see developments in this aspect of model boating that will far outstrip gas powered model boats. •



The HMS Sheffield as she looks at the completion of this Part I of the two-part construction article. Part II will describe in detail the installation of the electrical system, the radio control system, and the guns and magazines.

HMS SHEFFIELD

PART I: BUILD THIS RC COMBAT CRUISER

BY TOM JASS

The "Town" class heavy cruisers were designed by the British in the mid-1930s to answer the revolutionary challenge of the Japanese-built "Mogami" class heavy cruisers, which mounted fifteen six-inch guns and were credited with 35 knot speed. The Towns carried twelve six-inch guns in four turrets on a hull 592 feet long; they displaced 12,800 tons (full load), and made a top speed of 32 knots. Eight ships were built between 1937 and 1939: "Newcastle," "Southampton," "Sheffield," "Glasgow," "Birmingham," "Manchester," "Liverpool," and "Gloucester." Two modified Towns ("Belfast" and "Edinburgh") were later constructed with additional AA armament, but identical main guns. According to the *Encyclopedia of the World's Warships* (Cressent Books, 1979), "The result was a powerful and well balanced design, with a heavy main armament, a well arranged anti-aircraft battery, and extensive armour protection." They served with distinction throughout World War II. HMS Belfast is preserved as a war memorial on the Thames River in London.

REQUIREMENTS FOR RC COMBAT

Model warships which participate in RC combat must conform to specific, detailed construction rules. They are built to 1/144 scale (1" in model size equals 12' in the full sized ship). The model's hull must be covered with penetrable 1/32-inch balsawood from the hull gunwhales to one inch below the waterline. The ship's superstructure, however, may be built from impenetrable material. A heavy cruiser may mount two 50-shot bb guns (mounted fore and/or aft) and one pump to de-water the ship when (not if) she is damaged. Of the hull length, 85% must he penetrable, while the extreme bow and stern areas may be solid (1-1/2 inch and 1-inch respectively). This model is built with 1/4-inch wide ribs; therefore, 19 ribs are the maximum allowed. I have always maintained that a heavy cruiser is the best ship class to build as an entry into RC combat. Heavy cruisers pack a good balance of offensive and defensive power for their hull size. They are much simpler to build and maintain than capital ships, and they give a new captain a chance to get his feet wet (literally) for a reasonable expenditure of time and money. Smaller ships are cramped inside and more difficult to build, and they pack much less offensive punch. Shown at the top of the next page is a table which compares the characteristics of the original HMS Sheffield and the model built to our construction rules.

	HMS SHEFFIELD	RC MODEL
Overall length	592'	49.33"
Beam	62'	5.17"
Draft	18'	1.50inch
Standard Displacement	9,400 tons	7.05 lbs.
Full Load Displacement	12,800 tons	9.60 lbs.
Speed	32 kts	24sec/100'
Main Guns	12x6"	2 bb guns
Armour	4.5"	1 pump

A few special tools will be required for this project beyond the standard ones found in most workshops. A Dremel tool (or equivalent) is a necessity, not a luxury, when working with plywood, hardwood and metal. An X-Acto mitre box and saw equipped with a #239 blade, a plumber's propane torch and silver solder for brass and copper sweating, X-Acto Extra-Hands (a jig arrangement with two alligator clips at the end of adjustable arms), and a scale with a 20 lb. range are specialized tools which are required during model construction. A table-mounted disk sander is very useful, but not a necessity. Throughout this article "hardwood" refers to spruce, "plywood" is aircraft plywood (available at any good hobby shop), and "glue" is any brand of cyanoacrylate (medium viscosity).

I have built ten combat ship models during the past six years, and although my building methods have evolved considerably during that period, my main building philosophy has remained the KISS principle (Keep It Simple, Stupid!). With that thought always in mind, let us begin.

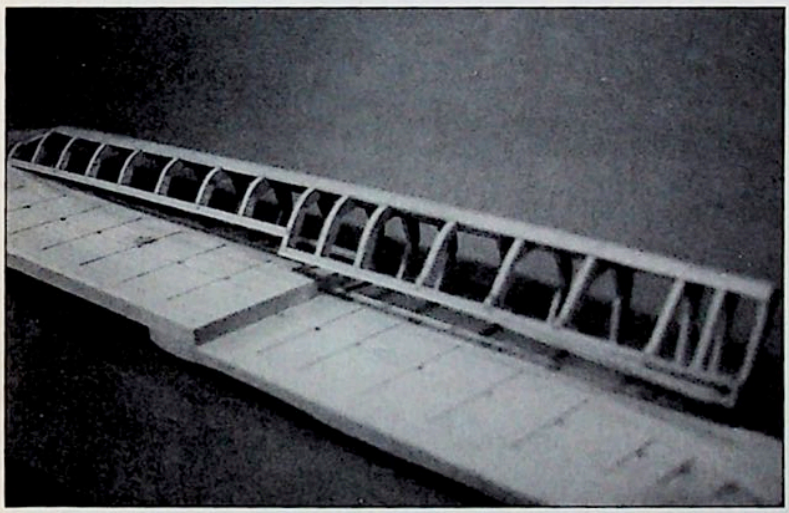
Construction of the HMS Sheffield will be covered in two articles; the first will detail the building of the hull and the superstructure. The second article will describe the installation of the electrical system, the RC system, and the guns and magazines.

BUILDING THE HULL FRAME

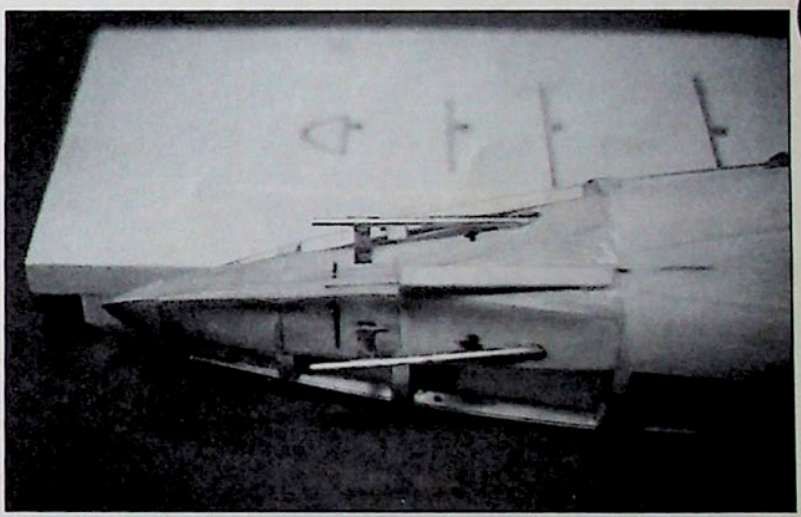
The hull frame is built upside down on a wooden jig to insure that the completed hull is straight, with no waviness at the gunwhale line. Sheffield has shear (vertical hull rise) in her forcastle deck; to simplify construction, this feature is added to the hull after it is removed from the building jig. Constructing a jig with the shear built in is possible, but it is much easier to build on a flat jig and add the shear later. Construct the jig from a straight, warp-free piece of 1x8-inch pine, six feet long. The jig is built from three pieces . . . 33, 24, and 3-inch. Use the leftover 12-inch piece as a cutting board during the remaining building process. Glue and nail the three-inch long piece to the bottom of the 33-inch plank, flush with one end. As the model has a step in her deck level, the jig must be built with a corresponding change in deck levels. Glue and nail the 24-inch piece of wood to the 33-inch plank, on the same side as the short three-inch piece, but at the opposite end. These two long pieces are overlapped by three inches. (See the plans to clarify any questions.) The stern section of the hull aft of the step will be built over the 33-inch long portion of the jig; the forward section of the hull below the raised forecastle deck is constructed over the lower 21-inch section of the jig.

Locate the longitudinal centerline of the jig and draw it on both sections of the jig. Mark each rib location and width on the jig with an indelible marking pen, working fore and aft from the step. Determine the athwartships width of each rib from the rib profiles on the plans. Note that all of the ribs (except G and Q) are three inches apart. Insure that the overall length of the hull on the jig is 49.25 inches, including the solid bow and stern areas. When all the rib locations are marked on the jig, cover the jig with wax paper. Temporarily fasten the 1/4-inch square hardwood gunwhales to the jig with small nails. Drill the gunwhales where the nails are placed so the wood doesn't split; don't locate a nail beneath a rib. At the extreme bow and stern, glue a 1/16-inch plywood strip (3/4-inch wide) across the gunwhales to tie them together.

As I don't have a bandsaw, I built up all the ribs from 1/2x1/4-inch hardwood with gussets in the interior corners, but the ribs can also be made from 1/4-inch plywood if that is your choice. After the ribs are shaped and sanded, cut two 1/4-inch square notches in each rib to accommodate the gunwhales. Also cut two 3/32-



Completed hull frame with building jig. Note that forward deck shear has been added.



Stern of hull with stuffing tube and prop strut installed.

inch square notches in each rib for the stringers which are located one inch below the waterline. Use a #194 Dremel bit to form these notches. Next drill a 3/16-inch hole through each side of ribs F through N. The electrical wiring harnesses will be threaded through these holes later. Glue each rib to both gunwhales at the correct fore and aft location; use a triangle to insure that each rib is installed perpendicular to the jig. Note that Rib H (at the step location) has four 1/4-inch square notches . . . both the high gunwhale and the low gunwhale are glued to this rib.

A 48x12-inch piece of Midwest "Micro-Lite" plywood (3mm thick) is large enough to provide material for both the decking and the keel . . . and it's about one third as expensive as a piece of 3/32-inch aircraft plywood. Cut four pieces (5-1/4x12-inch with the grain running parallel to the 5-1/4 inch side) from the sheet; set these pieces aside to be used later as decking. Next, cut the "keel" pieces to the correct length and width from the remaining 27x12-inch piece of plywood sheet. The keel covers the flat bottom portion of the ribs and is fabricated from three pieces . . . from Rib A to Rib F, from Rib F to Rib O, and from Rib O to Rib R. Note that the grain of the keel runs fore and aft. Glue these three pieces to the bottom of the ribs, adding weights to insure good contact between the keel and all ribs. Next glue the two 3/32-inch square stringers into the notches in each rib, from Rib A to Rib R.

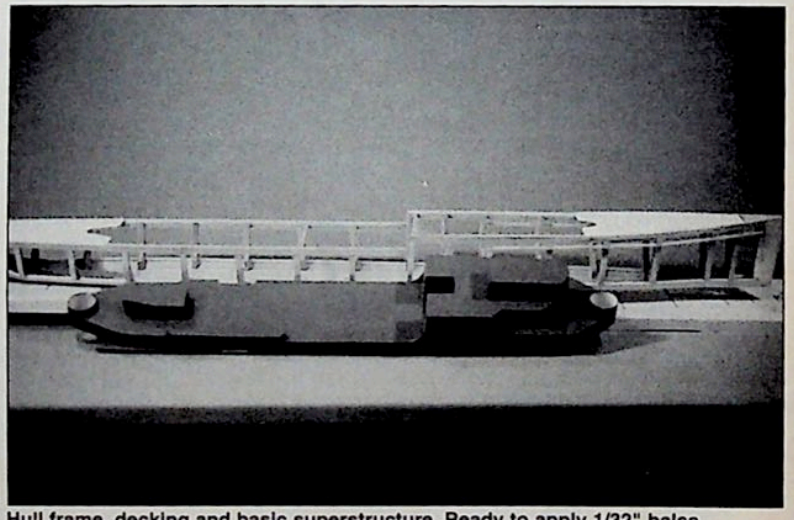
After the glue is dry, pry the hull carefully from the jig. Fasten each rib to both gunwhales, using #2 by 1/2-inch brass screws with countersunk heads. Drill pilot holes at each screw location. Amidships (Ribs F through M), the screws are fastened through the top of the gunwhale. In the bow and stern areas (Ribs A through E and N through R) the screws are fastened through the side of the gunwhales. Do not omit this step, as the screws immensely strengthen the entire hull assembly. These ships experience rough handling and a strong, straight hull frame will last for years if built correctly. Fasten 1/4-inch square hardwood spreaders between the gunwhales at the forward face of the following rib locations: D, H, J and N. Again use brass screws through the edge of the gunwhales to complete these joints.

Refasten the hull to the jig using the original nail holes. Next, cover the bilge curve on both sides of the hull with 1/32-inch plywood sheeting between the 3/32-inch stringers and the plywood keel. First, bevel the edges of the plywood keel along each side with sandpaper so that the keel fairs smoothly into each rib shape. Then cover the bilge curve areas of the hull with strips of 1/32-inch plywood 1-1/4 inch wide, with the grain running fore and aft; wet these pieces to ease the curving. Cover the area between adjacent ribs with a separate piece of plywood. Glue the plywood to the 3/32-inch square stringer first, and when the glue is set, wrap the plywood around the edge of the keel and glue it to the keel (using kicker to hasten the process). Use cardboard from a manila folder to make templates for these plywood strips. This minimizes wasting expensive plywood. Aft of Rib O, use 1/64-inch plywood for the skin because of the extensive, complex curves in this area. Cover the center area of the keel with additional strips of 1/32-inch plywood between the areas where the already-installed plywood overlaps the keel. Sand the sheeted hull smooth, remembering that the plywood is only 1/32-inch thick. Fill any gaps with a hobby filler and sand the wood again.

Now drape a suitable sized piece of K&B Fiberglass Cloth (#8161, medium) over the partially sheeted hull and paint one ounce of K&B Polyester Resin (#8152) onto the fiberglass cloth. The resin saturates the cloth and fastens it to the plywood hull skin. After the resin dries, trim the cloth flush with the 3/32-inch stringers and sand the hull smooth again . . . the resin, which dries shiny, will take on a cloudy look when it is sanded. Do not sand through the fiberglass cloth. After a thorough sanding, paint the bottom of the hull with another coat of resin and sand again. When this step is complete remove the hull from the jig and lay it right side up on the jig. Mix another batch of resin and pour it onto the top surface of the keel, insuring that the area between ribs is filled to an equal depth (about 1/32-inch).

The deck shear forward of Rib D is built on top of the completed hull frame at this time. Glue the 1/4x1/2-inch top portions of Ribs A through C atop the existing 1/4-inch gunwhales. Notch these to accept the new 1/4-inch square gunwhale which will be installed. Taper the after end of the new gunwhales to the correct angle and glue and screw the new gunwhales to Ribs A through C. After sanding the new gunwhales to the correct contour, remove the original (lower) gunwhales with a saw between Ribs A and C to comply with our penetrable hull area restrictions. Glue the 3/32-inch square stringer which defines the forward hull

Completed forward deck shear and "knuckle" defined by 3/32" hardwood stringer.



Hull frame, decking and basic superstructure. Ready to apply 1/32" balsa skin.

"knuckle" into the notches in Ribs A through F after the notches have been cut out. Take care at this step to insure that the curve which the stringer defines is not wavy . . . the knuckle is located 3/4-inch below the forecastle deck level for its entire length. Adjust the vertical location of the 3/32-inch rib notches to provide a smooth curve. Add laminations of 1/2-inch balsa to define the solid bow and stern sections of the hull. Use a profile of 1/16-inch plywood in the middle of these sections to accurately define the side profiles. Form the final bow and stern shapes by whittling and sanding the balsa blocks.

Cut 1/32-inch plywood into 1/4-inch wide strips with the grain running parallel to the 1/4-inch dimension; cut these cap strips to correct length and glue them to the outside edge of all ribs and both the port and starboard gunwhales. These cap strips compensate for the additional 1/32-inch width that was added to the lower portion of the hull one inch below the waterline when that area was sheeted. When all the cap strips are installed, sand the outside surfaces of the ribs and gunwhales to insure a smooth, streamlined hull shape. Then finish all hull frame surfaces with one coat of epoxy resin to thoroughly seal the structure, inside and out. Remove the bottom center portion of Ribs C through O by sawing down to the keel level through each side of the rib and breaking the center section out with pliers. This allows the batteries, RC equipment watertight boxes, and motors to be mounted as low in the hull as possible. It also provides an unobstructed path for any internal water (due to battle damage) to run freely to the pump location. After removing these center sections and smoothing any rough areas, mix a one ounce batch of resin and pour it into the inside bottom of the hull to provide a smooth interior hull surface from bow to stern.

BUILDING THE DECKS

The deck is three separate, removable sections. The locations of the deck joints are shown on the plans. These individual deck sections are built from the four 5-1/4x12-inch lite plywood sheets (3mm thick) that were previously cut from the keel sheet. The wood grain in the three deck sections runs athwartships; this minimizes any warping during the model's life. Glue two of the 3mm sheets together (on the 5-1/4 inch edge) using a piece of 1/16-inch plywood (3x1-inch) to reinforce the joint. These joined pieces form the forecastle deck. Repeat this process to build the main deck (fore and aft of the step), and the stern section. The step itself is a piece of 1/4x3/4-inch hardwood (laminated from three pieces of 1/4-inch square). Note that there is a short section of 3mm deck at the extreme bow and stern; these two sections should be cut and glued in position now.

Now, carefully position the oversized deck sections individually on top of the hull frame; draw a line around the outside edges of the gunwhales with a soft pencil (on the bottom of the deck). Remove the deck sections and use a piece of 3/32-inch square hardwood (about 36 inches long) to draw a second deck profile line parallel to the first ones, but 3/32-inch inside of the original lines. This creates a correctly shaped deck whose width is everywhere 3/32-inch less than the gunwhale outlines. Remove the excess material from each deck section using a utility knife rather than a saw. Cut the three deck

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sections to shape using the technique described above.

Place the center deck section back on the gunwhales of the hull frame in the correct fore and aft location. Tape the center deck section to the port gunwhale, insuring that the deck edge is 3/32-inch inside of the outside edge of the gunwhale. When the deck section is correctly located, a 3/32-inch square hardwood stringer is lightly tack glued on top the starboard gunwhale. Remove the tape from the port gunwhale and tack glue another 3/32-inch stringer atop the port gunwhale. When the stringers have been tack glued to both port and starboard side gunwhales, pop the decking out and glue the 3/32-inch stringers solidly to the gunwhales. Repeat this entire process for the forecastle and stern deck sections. When all the 3/32-inch square stringer sections are solidly glued around the perimeter of the hull, sand the outside of the stringer to a smooth contour with the hull frame. This technique provides a nearly watertight deck seal without requiring gaskets and numerous deck screws. Finish the bottom surface of all three deck sections with one coat of epoxy resin. Glue a plywood tab on the bottom of the removable deck bow section at its front; do the same at the back of the removable stern deck section. These tabs help anchor the removable sections to the hull.

The removable deck sections are fastened to the hull frame using Sig #2x3/8-inch sheet metal screws. Note the locations on the plans. Quarter-inch square hardwood pieces (about one inch long) are glued to the inside of the gunwhale below these screw locations to provide a mating surface. There are fancier methods to attach the deck to the hull (for example, with hidden latches), but the screws are in keeping with the KISS principle.

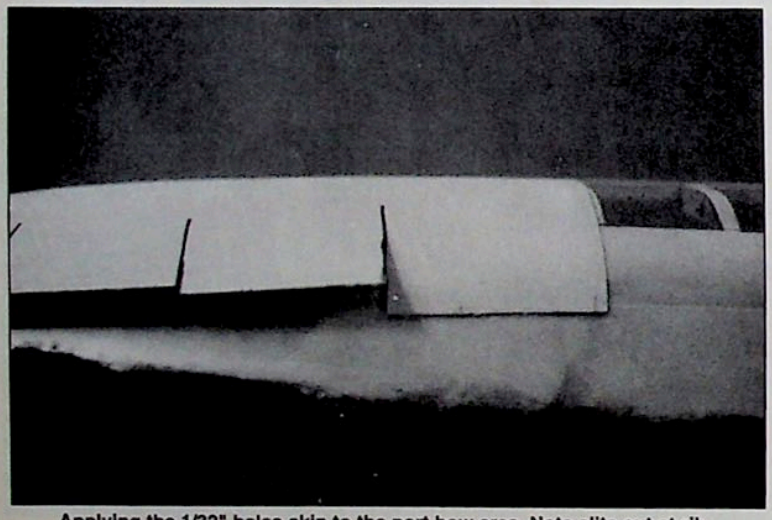
FABRICATING PROP SHAFTS AND RUDDER POST

The prop shafts are 1/8-inch diameter brass rods, six inches long. Fabricate two stuffing tubes from 3/16-inch diameter brass tubing, 3-1/2 inches long. Silver solder a 5/32-inch diameter piece of brass tubing (3/8-inch long) into each end of each stuffing tube to act as "journal bearings" for the prop shafts. Build two prop struts by silver soldering a 1/2-inch long piece of 5/32-inch diameter brass tubing to a strut of 1/16x1/4-inch brass, 1-1/4 inches long. Position the hull upside down on the jig and locate the two shaft centerlines, one inch on either side of the hull centerline between Ribs M and Q. The shafts pierce the hull skin about one inch aft of Rib O. Use a Dremel tool to cut two elliptical holes in the hull skin where each shaft penetrates. Notch Rib O on each side to allow the stuffing tubes to be installed parallel to the keel of the ship and the premarked shaft centerlines. Cut two 1/16x1/4-inch slots about 1/4-inch aft of Rib P; the prop struts pierce the hull skin at these locations. Fit the shafts through the struts and the stuffing tubes and glue the stuffing tubes and the struts to the hull skin when both shafts are correctly aligned. Insure that the shafts turn freely in the stuffing tubes and struts before gluing the assemblies to the hull! The struts are permanently anchored to the hull by pouring a one-inch deep layer of resin into the inside of the hull between Ribs P and Q.

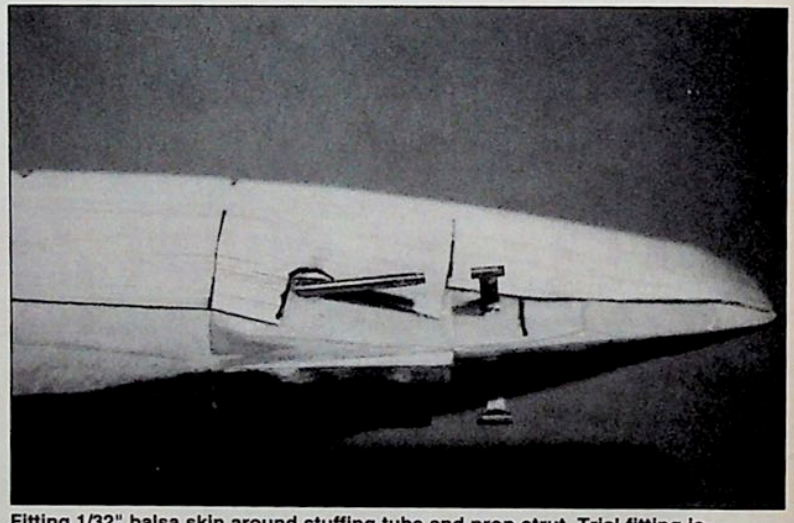
The rudder post is a piece of 5/32-inch diameter brass tubing (1-1/4 inches long). Drill a hole through the centerline of the ship 3/8-inch aft of Rib Q and install the rudder post. It is tacked to the hull skin with glue when it is plumb. Flood the area between Ribs Q and R with resin to a depth of 3/4 inches to anchor the post. Build the rudder from .025-inch brass plate silver soldered to a 1/8-inch diameter rudder post. The maximum area of the rudder is two square inches, per our battling rules. The rudder shape may be changed from the plans if you desire, but the area must not exceed two square inches.

SHEETING THE HULL

The hull frame is now ready to be sheeted with 1/32-inch balsa. One 1x4x36-inch sheet and two 1x3x36-inch sheets are required to cover both sides of the hull. First cut the 1x4-inch sheet into two 18-inch long sheets. Since 1/32-inch balsa is flimsy and easily dented with just normal handling, both sides of the hull skin will be covered with sheets of "00" grade silkspan . . . this process is legal within our rules. The silkspan will seal the balsa grain and act as a "cheap" lightweight fiberglass covering. Silkspan is like tissue paper (available at a good hobby shop) which is used to cover model airplanes. We old timers actually used it for that purpose in our World War II youth! It is attached to balsawood using dope (lacquer) as the adhesive. If it becomes wrinkled prior to application, it can be ironed to remove the wrinkles. I have always used Pactra Aero Gloss dope on my model airplanes, and I continue to use it on model warships. It dries quickly, doesn't warp balsa wood and works well with silkspan.



Applying the 1/32" balsa skin to the port bow area. Note slits cut at rib locations.



Fitting 1/32" balsa skin around stuffing tube and prop strut. Trial fitting is required.

First, paint the four balsa sheets on one side with a coat of Balsa Filler-coat, and then sand lightly when the dope is dry. Next, paint a coat of clear dope on the first balsa sheet; while the dope is still wet, carefully apply a precut silkspan sheet to the balsa sheet. Remove all wrinkles in the silkspan by rubbing them out with the brush and your fingertips (there is some pain attached to this hobby). After the dope dries, sand the surface lightly and apply two coats of Cessna Gray. Repeat this process on the other three balsa sheets. The interior finish on the hull skin sheets is now complete.

Each side of the hull is covered with four individual 1/32-inch sheets. One of the 4-inch wide sheets (18 inches long) is used to cover the hull frame below the hull knuckle from the bow to Rib F. One 36x3-inch sheet will cover the after hull, from Rib F to the stern. A third scrap piece (1-inch wide) covers the knuckle from the bow to Rib F; and a small, scrap filler piece is required from Rib F to Rib H (above the 3-inch wide sheet). First, glue the 3-inch wide sheet to the gunwhale aft of the deck step. Locate the vertical centerlines of Ribs H through P on the outside surface of the balsa sheet and mark them with a felt tipped pen. Use a SHARP knife to cut a slit approximately 1-1/2 inches long, starting at the bottom of the sheet at each rib location (see the photos). Wrap the sheet between Rib F and Rib G around the bilge curve of the hull and glue it to the 1/32-inch plywood skin. Apply the glue to the balsa sheet from inside the hull as well as from the exterior. Work your way aft on the hull, gluing the skin to the hull in sections between adjacent ribs. If the skin of two adjacent sections will overlap at the bottom of the hull, cut a "V" shaped notch at bottom of the slit location to insure that adjacent skin panels will form a butt joint. Be extremely careful in the areas around the stuffing tube and prop strut exits; several trial fittings may be required before the skin is glued in place in this section. Next, attach the four-inch wide sheet to the hull forward from Rib F to the bow, below the knuckle. First glue this sheet to the bottom, outside edge of the 3/32-inch square knuckle stringer, and slit the sheet at each rib location as before. Work your way forward and down from Rib F, gluing the sheet between adjacent ribs. Next, cover the knuckle with 1/32-inch sheet (with the grain running vertically). Finally, cover the small piece left between Rib F and Rib H, over

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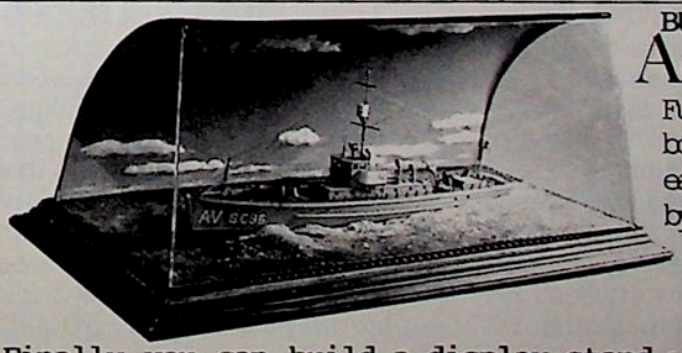

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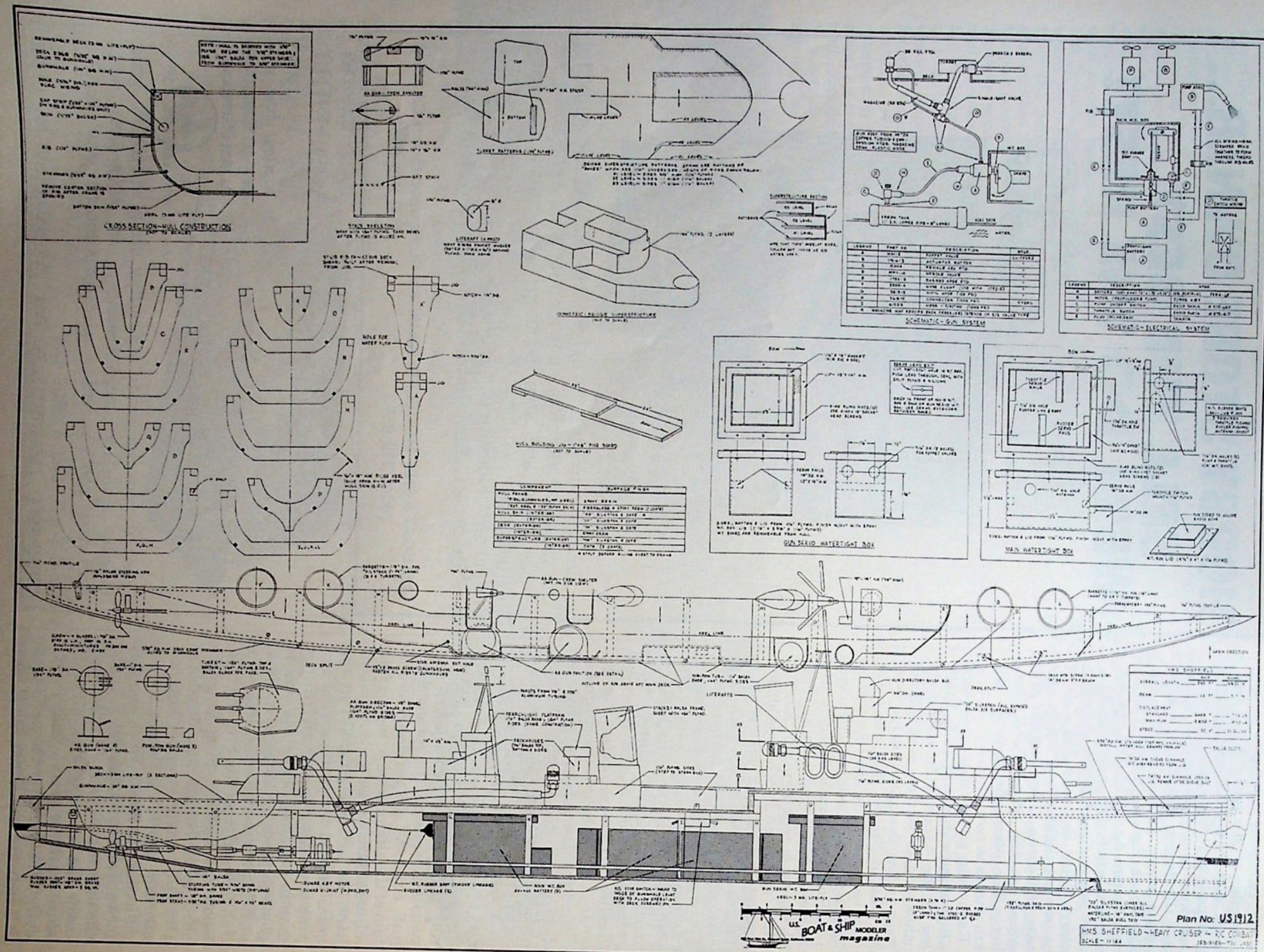
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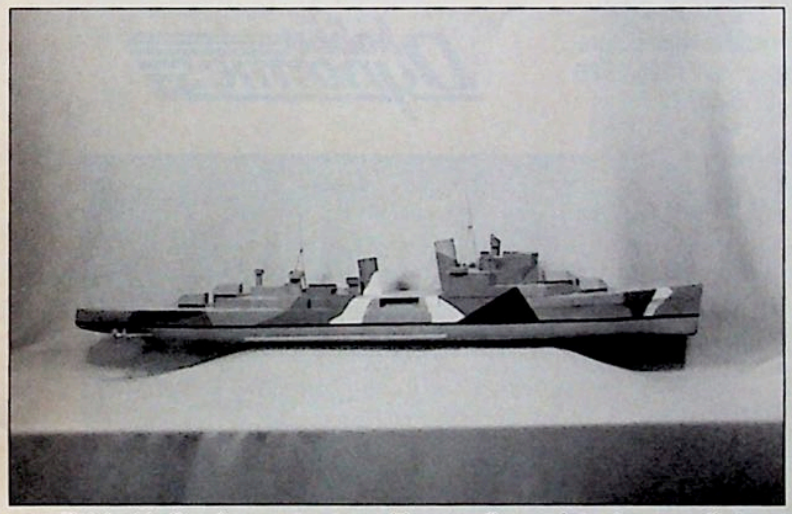
the 3-inch sheet.

Sand the skin carefully and fill any dents and gaps with hobby filler. Sand the skin extensively over the bilge curve area where it is wrapped over the plywood skin to ensure a smooth feathered joint between the balsa and plywood. Take care when sanding along the knuckle joint so that a crisp, sharp knuckle edge is produced (this is a distinctive characteristic of British cruisers). Carefully fill and sand the area around the prop strut and stuffing tube exits.

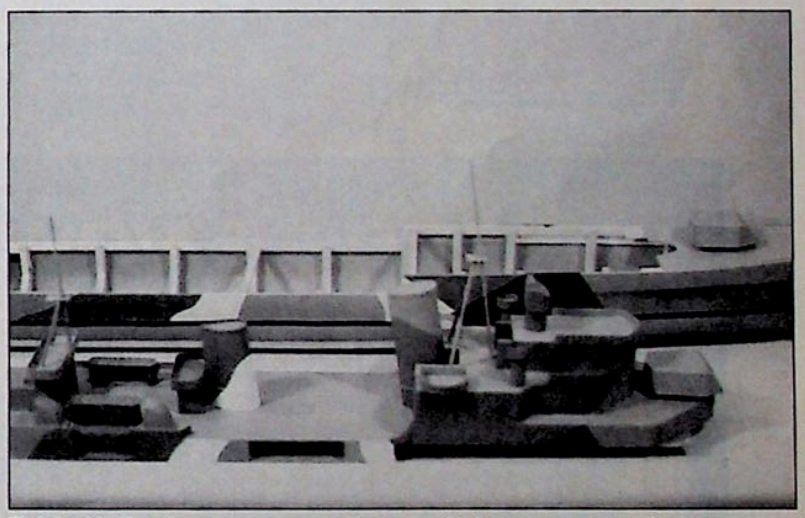
When satisfied with the sanding, apply one coat of Balsa Fillercoat to the entire hull skin, and sand it lightly when dry. Next apply silkspan to the exterior hull skin with clear dope, using individual pieces roughly the same size as the original balsa sheets. Once again begin by attaching the silkspan at the gunwhale level, and work downward between adjacent ribs. Cut slits at the bottom of the silkspan sheet to allow for curvature at the hull bottom. All wrinkles and folds in the silkspan must be worked out before the dope dries, because only light sanding is allowed once the silkspan is attached. If any bubbles appear in the silkspan, slit the bubble with a sharp knife and work the imperfection out with your fingers. If you are patient and careful you can cover a sphere with silkspan and it will turn out great!

After the entire hull skin is covered with silkspan, apply another thick coat of Balsa Fillercoat and sand it lightly when dry. Then paint the entire hull with three coats of Cessna Gray. Repeat this entire process to skin the other side of the hull. After both sides are skinned and painted with Cessna Gray, mark the waterline on both sides of the hull from bow to stern. Construct two bilge keels from pieces of 1/16x1/4-inch hardwood, 16 inches long; glue them on either side of the hull, one inch below the waterline running from Rib H aft. Seal them with two coats of gray paint. Cover the hull area above the waterline with masking tape and spray the hull bottom with rust colored automotive lacquer primer. If you plan to use a camouflage scheme on the ship now is the time to implement it. I used the following Pactra Aero Gloss dope colors: Olive Drab; Corsair Blue; Cessna Gray; Flat Cloud Gray. A camouflage scheme actually makes your ship easier for you to identify when there are 29 ships battling together on the water. I recommend it. Attach the 1/4-inch wide black waterline tape now (Carl Goldberg Color Stripe) when all the hull painting is complete.

Silkspan the top surfaces of the three deck sections and finish them with Aero Gloss Camouflage Tan dope to simulate teak decking.



Finished hull and superstructure with camouflage paint scheme applied.



Finished hull and superstructure with center deck section removed.

BUILDING THE SUPERSTRUCTURE

Our club construction rules permit a model's superstructure to be built of impenetrable material. However, extensive use of plywood and hardwood on a cruiser superstructure would add too much topside weight far above the center of gravity of the model. A cruiser with excess topside weight will be top-heavy and unstable. Our construction rules require that superstructure components greater than one cubic inch in volume (at 1/144 scale) be present on the model; consequently, small details such as radar antennas, 20mm gun tubs, galley chimneys, flag boxes, etc., may be omitted. My superstructure detailing philosophy has always been, "If it isn't distinguishable from 10 feet away, don't bother to build it." But you can build as much detail on the superstructure of your model as you desire . . . whatever floats your boat! Models in our club which win Best of Scale awards are as elaborately detailed as some non-sailing scale warships I have seen. If you desire to add more superstructure detail than is shown on the planset, consult *British Cruisers of World War Two*, Alan Raven and John Roberts, Arms and Armour Press, 1980. This book contains a wealth of information in text and photos concerning the design, construction and war record, and camouflage schemes of each British cruiser (light and heavy) that saw action in WWII. It is a must for serious British captains!

The basic bridge assembly is constructed as three separate boxes (each complete with tops and bottoms) which are glued together after completion. The bottom (01 level) box is built with 1/16-inch plywood sides and contains the B turret barbette which is a 1-1/4 inch long piece of 1-1/2 inch diameter PVC tail stock (from the plumbing section in a hardware store). Sheet the top and bottom of this box with 1/16-inch balsa with the grain running athwartships (as does all decking in the superstructure). Sheet the curved forward section which wraps around the B turret barbette with 1/64-inch plywood for additional strength. Place the deck back onto the hull before gluing the 01 level bridge box to the deck. This insures an unwarped mating of these pieces. The 02 and 03 levels of the bridge are also built as separate boxes, completely from 1/16-inch hard

continued on page 63

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A VERSATILE TRADITIONAL KETCH

With those red sails, all we need is a sunset and six violins backed by a full orchestra!

BY JERRY DUNLAP

Traditional sailing rigs, like the spritsail, lug sail and gaff rig, have a beauty that makes them appealing in spite of their lesser efficiency. In Brooklin, Maine, there is a sailing school where they still teach the old ways of navigating, and my wife and I keep their catalog in our "wish book" of things that must be done someday. Meanwhile, model building offers another way of studying these wonders of wood and hemp and natural fabric.

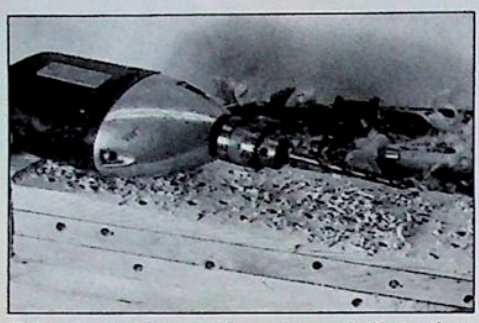
Sea history offers many possible prototypes for working models of traditional rig. The books of Howard Chapelle have plans for many interesting schooners that could be adapted to make original working models. But I found my prototype at the Chicago Wooden Boat Show, the old Baltic trading ketch "Fri," now a part of the Greenpeace navy. This salty survivor of the age of sail seemed perfect for a radio control model because of its roomy hull and its large hatches.

I had previously modeled a small, 24-inch, Scottish fishing trawler, the "Ocean Reward," but turned it into a static display because it was too crowded inside. The Fri, in contrast, looked like it would be a pleasure to work on. The real vessel, as it was opened for public inspection, had two big hatches that admitted light and air, together with a big cabin aft over the auxiliary diesel. The Fri is one of many surviving cargo carriers of the North Sea, many of them having been used for movie ships and replicas. They have roomy hulls with a lot of oak in their construction, which discourages the rot that can shorten a wooden craft's lifespan. Fri was built in 1912 in Denmark and has an ancient patina of Stockholm tar and pitch; her cracked and oiled spars were a dramatic contrast to the varnished top hamper of the wooden yachts that surrounded her

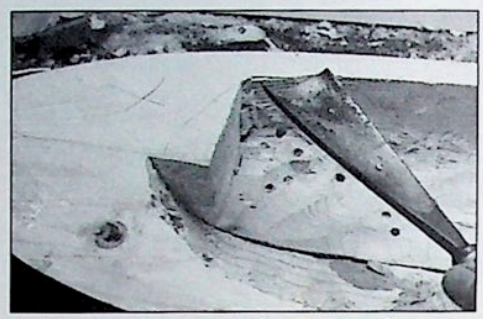
when I saw her at Navy Pier's Wooden Boat Show.

The decision to model her was assured when I discovered scale drawings in the book *Fri Alert,* sold by Greenpeace people on board the ers; it is sold only on board the Fri. But a very similar model can be made from Chapelle or from traditional plans in *Woodenboat* magazine.

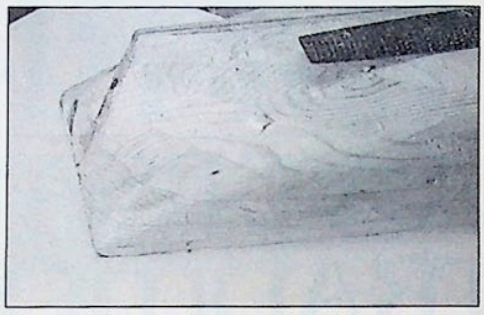
I especially liked the fact that Fri had an auxiliary engine, so that if my from the plans of these survivors drawn by Harold Underhill and still available from The Dromedary (see ad in this magazine). In kits, the schooner "Emma C. Berry," by Sterling, is a traditional rig designed



Hollowing out is easy if you do one half at a time. Knots can be drilled and filled with Bondo.



A sharp gouge and a wooden mallet make the chips fly just like in real wooden ship building. An electric drill softens up the work.

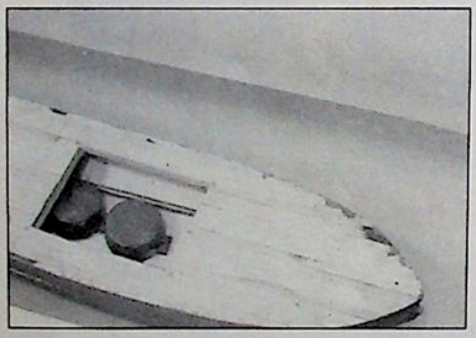


The two halves are temporarily held together to check symmetry. The rasp is an 18-incher.

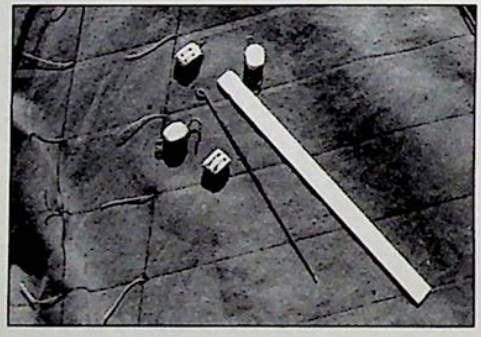
vessel. Although not complete lines plans, these measured diagrams by Orietta Sloth gave enough data on which to base an accurate model. Unfortunately, the book is not readily available for other model build- model didn't sail too well I could add this feature to cope with emergencies at sea. In the later days of sail many tall ships and smaller craft added auxiliary engines, so some very interesting models could be made with RC in mind, and its size of 49-1/2 inches in length gives good work room in the hold.

The seventy-eight year old Fri still sails the world, making things difficult for polluters, and must be con-

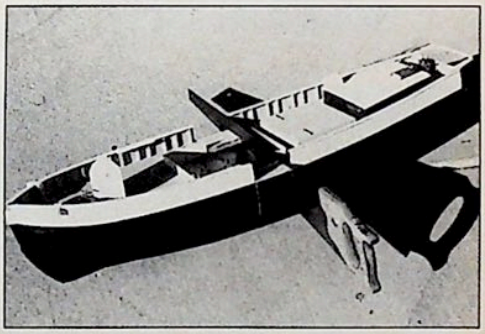
The deck is half-inch square stock. Bulwarks have not yet been added.



The blocks are made of styrene and stropped with wire. Seams on the sail were drawn in with a brown ball-point pen.



Ouch! Drastic action was called for to make the ship more portable. Three inches was sawed out of the widest point of the ship.



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sidered one of the very successful designs for all-weather voyaging. I've always been intrigued by the idea for a model that would sail in rough weather, and so the Fri seemed like a challenging project. The model

The shortened Fri under full control (but empty sails). Her lack of winches calls for fair weather sailing.

design is still evolving, and I've been working at it off and on for four years now. Scratch building RC cannot be rushed.

CONSTRUCTION OF THE MODEL

Traditional methods seemed appropriate for building the Fri. She is wood, lacquer, cordage and cloth with only the radio gear being modern. My system of construction would be well understood by certain ancient shipwrights, in that no full-sized plans were drawn up.

First, I went over the Sloth drawings with an architect's scale. They seemed to be at 3/16-of-an-inch to the foot, and I made a long list of all the key dimensions as they would be in feet and inches. In the drawing, Fri was 77 feet long; if I used 1/2-inch to the foot my model hull would be half this, or 38-1/2 inches, with a width of 10 inches . . . lot's of interior room for multi channels with bells and whistles!

However, the Fri's bowsprit added another 13 inches in length, but I thought I could make this removable to aid in transporting the model. Similarly the stern davits added a few inches more, but that didn't seem to be a problem, then.

I measured the back seat of my Mazda and it seemed like the vessel should fit. There are some problems in this, because the angle of the back door prevents a straight entry, but I thought I could deal with it all by making the rig fold up.

Building was a happy affair, just like working in a shipyard again. I got some good exercise by building up two halves of the craft in bread and butter and hollowing them out with my gouges and my lignum vitae mallet. I heartily recommend the drawing of full-sized plans, if you don't have the eye for this sort of approach. I simply used all of my dimensions as marked directly onto the wood, and only one template was

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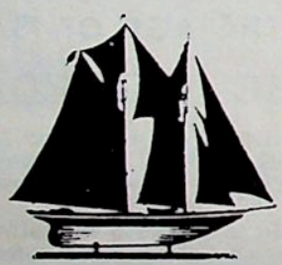

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drawn, the midship section.

After laminating the port and starboard halves of lumberyard knotty pine it is not hard to sketch the deck outline on one of these baulks. One side is selected as the centerline of the ship, and measurements can be laid out on the wood to get a series of points to connect for the outboard curve of the rail. Ideally you would use a bandsaw to cut this first curve, or it can be cut in sections with a sharp handsaw. When smoothed with a large chisel, it will make a nice curve even if your points and connecting marks are off a fraction. Once you have this first curve laid out, it is easy to stand it on top of the other baulk and trace it. What we are doing is making two half-hull models that we will later join together.

With the two halves cut to the deck outline you have a view of the mass of the thing, an idea of what the finished ship will be. Now, take one side and draw on it the profile, what an architect calls the elevation, using measured points from the drawing.

If you have ship's curves you can carefully connect these points, but in this method you don't need to because carving the thing out will naturally smooth and fair the lines . . . just like whittling a big toothpick! And after the one profile is shaped, again, it is easy to trace the opposite half.

Rounding off the bottom can be done with a template or with a bevel gage, because Fri has a pretty simple section, without any S-curves like some older ships had. Also, Fri has no deck camber to complicate things, only the sweep of the sheer curve.

This brings us to the stage of hollowing out. Most of the knots should have been positioned in the center of the hull, because this will be removed. One means of hollowing out would be to fasten the planks with a light glue, like Elmer's Glue-All, and after shaping the outside, simply knock them apart to hollow out with a band saw. My method is the traditional one of mallet and gouge, but with one modern advantage . . . I use an electric drill to "blast out" knots and to generally soften it up. Hollowing out was done to allow a one-inch wall all around that makes it easy later to put in strong rigging fittings. The bow was left solid for the first four inches; no gear will go there, and it makes a good foundation for the bowsprit.

The lamination was done with Elmer's Carpenter's Glue, a water-based adhesive that is easy to cut through in the hollowing-out process. As far as watertightness goes, I have had no trouble; she is a dry ship. This adhesive is sealed in with several coats of lacquer, as well as the coppering, but even a hold full of water has not affected the laminations. Of course, RC use is light duty for a ship. Two hours in the pond is a long voyage.

The two hull halves were joined with Weldwood Four-Minute epoxy, and the white oak keel, stem, and stern post were epoxied on. The keel on Fri is scale; she has a keel shoe

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that adds 1/8-inch of draft to her 1/2-inch keel, ample lateral plane for sailing. For stability, she has enough room in her burdensome hull to pack in lead ballast. Most sailing scale ships need a deep keel with a lead bulb that looks odd out of water, but I had read in one of the British hobby magazines about a fellow who had experimented successfully with inboard ballast in sloops. The ketch rig of the Fri is actually small in sail area in comparison to a sloop . . . or a square rigger . . . so she is a good experimental vehicle for inboard ballast.

The white oak stem was put on in sections of a keystone shape; some places you can see the seams but that shows that she is a wooden ship. The original Fri has quite visible seams.

The hull at this stage had no rails or deck. Flat deck beams were fitted and the deck was planked over them with 1/2-inch square baluster stock from a lumberyard. Again, this gives a firm foundation in which to set masts, eyes and rail stanchions. Deck planks were allowed to run over and then trimmed to the edge and sanded to be invisible at the sides before the whole hull was painted. Priming was Ace Hardware Co. #130 White Sanding Sealer for Wood. Paint was ACE black lacquer, also in a spray can. No waterline was marked at this stage of the game.

After the large hatches were cut, I painted the underside of the deck with Impervo enamel, just as the interior had been done, but not as well. I tried to check this job with a dental mirror but it should have been done to the planks before they were laid down!

The edge of the deck was covered with a plank called the waterway, and the two-inch high bulwark was built up as per the drawings in Harold Underhill's *Plank on Frame Models*. The low poop deck was simply another layer of the baluster stock.

Hatches were completed in the style that I learned to build from Joe Sorn, an RC master. They are surrounded by one-inch styrene walls so that they resemble little wells, and then the hatch cover, an open-bottomed wooden box, fits snugly over them in a friction fit. Water thus has to go uphill to penetrate, if it can. Styrene-to-wood joints made with Hobsco Goo.

The cabin aft should have been made in this style, but as it was more complex, I just made it so that the roof lifts off. The cabin does not open into the hold. The roof is held on with the galley stove pipe, a birch dowel that screws into a nut on the cabin floor. Wood is quite easy to thread and tap; all you need is a nut and bolt of the needed diameter.

The forward companionway was made of styrene left over from the hatch wells. I might have used wood, but styrene went together so easily, even duplicating the wood paneling, that I departed from traditional techniques here. Trim on the basswood cabin was with 1/16-inch mahogany.

The bowsprit was joined to a knighthead, a vertical post, in the deck on the bow. This knighthead was removable because it sat like a peg in the solid bow structure but could be lifted out by lifting straight up on the knight. Masts were similarly stepped into the sturdy deck like pegs.

Scale sail making is a wonderful craft, but almost a whole other field of study. This model's sails were not sewn but rather assembled. I found some fabric in a shop called "Cinnabar," a nice, dark red that simulates the tanbark sails often used on the North Sea to make sailing craft more visible in fog. Some of these I bleached out, because actual working sailing craft had all different kinds of sail colors.

The sail dimensions were marked out on the fabric with pencil or little triangles of masking tape. Then bolt ropes, those lines used at the edges of traditional sails, were run through Hobsco Goo and laid down on the fabric under tension, weighted, to dry. When dry, the sail was easily trimmed to these lines, which were jute from a macrame shop. *continued*

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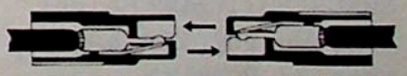

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My model making methods are the reverse of what I did in the shipyard where we worked on the big ones. There the materials were so expensive that everything had to be measured twice and cut exactly to fit. In modeling, the materials are relatively much cheaper and you can overlap-and-trim for speedy construction.

Hobsco Goo lets you make much smaller knots; it is a natural brown color that is nearly invisible for tucking in those little tails on knots, and it is somewhat flexible, while being water resistant.

Proportions of the rig were taken from the Maurice Griffith book, Dream Ships, and worked out by judgment of eye until they seemed to fit Fri. The spars were first put up in an assemblage of masking tape that could be maneuvered until they looked like the perspective drawings of Fri's sails by the helpful Sloth. Spars were dowel stock; none needed lathe turning; they were finished with Benchmark Dark Walnut wood stain. The top masts and jib boom were tapered by hand.

The maiden voyage took place before the RC was installed. Fri made some neat crossings of a local flood detention facility and seemed happiest on a reach. Ballast was two plumber's lead pigs and some 1/2-inch threaded steel rod.

After the successful voyage, my interest in the project waned. The problem was the awkwardness of transportation; she was just too darn long. The bowsprit had to be unshipped, and the main top mast threatened to poke a hole in the car upholstery. The answer was to make the top masts removable and the bowsprit shorter. Top masts, being in fids in the old style, were easily made removable, but trimming that beautiful bowsprit, even only three inches, was unthinkable. For a while I contemplated taking the aft davits off, but they were a characteristic of the craft. Finally, it called for drastic action! A three-inch section was sawed out of the midship region in a daring gamble that I would ever be able to get the ship back together again. The two halves, fortunately, almost fit together, and with some fudging and trimming and lots of epoxy, they did. I had to replace some sections of rail cap, mouldings and keel, but it all went together. This maneuver could not have been done on a fiberglass hull and would have been very hard on a plank-on-frame model.

Now having a more portable craft, I had the drive to fit in the RC and give her some nice extras; custom made blocks, better rigging for the permanent bowsprit, and a dinghy. The bottom was coppered at this time with copper foil from a shop selling stained glass supplies. The foil has its own adhesive and is quite watertight.

My Futaba two-channel receiver was fitted into the cabin and linked with two Carl Goldberg #351 rods from a wheel-shaped servo head to the rudder post, which had a similar wheel at its top. The rudder was held to the stern post with brass fittings by Dekam/Twinn-K, a nice looking brass set of pintles and gudgeons. The antenna wire was threaded through the rail stanchions all around the rail.

Sea trials showed the need for a much larger rudder, although I had made it twice scale size. It now has a removable styrene wing that is about four times scale size.

The Fri will always be an evolving and experimental craft. She has a brass bell in the ballast compartment that is supposed to work by gravity but may need a servo. There

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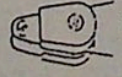

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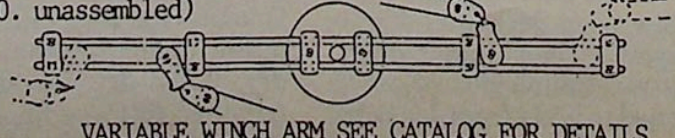

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is lots more room, even in the shortened hull, and she will likely get an auxiliary engine in the future. After that? Why not a little square rig? Many of the prototypes had square topsails. Then too, sail winches would be an asset in rough weather.

I wonder how it would sail if I made it longer? *(How about trading in the Mazda? wcn)*

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Dromedary Ship Modeler's Center, 6324 Belton Drive, El Paso, Texas 79912—has Sterling "Emma C. Berry" and the Billings "Lila Dan" kits.

Atlantic Schooner Association, Sanco Operating Corporation, 600 Madison Avenue, New York, NY 10022, can book you a passage on the Baltic trader "Lind."

Kimberly Cruises, Box 5086(P), St. Thomas, Virgin Islands 00801, agent for the brigantine "Romance."

Griffiths, Maurice. *Dream ships.* New York: Dodd, Mead & Co., 1949. •

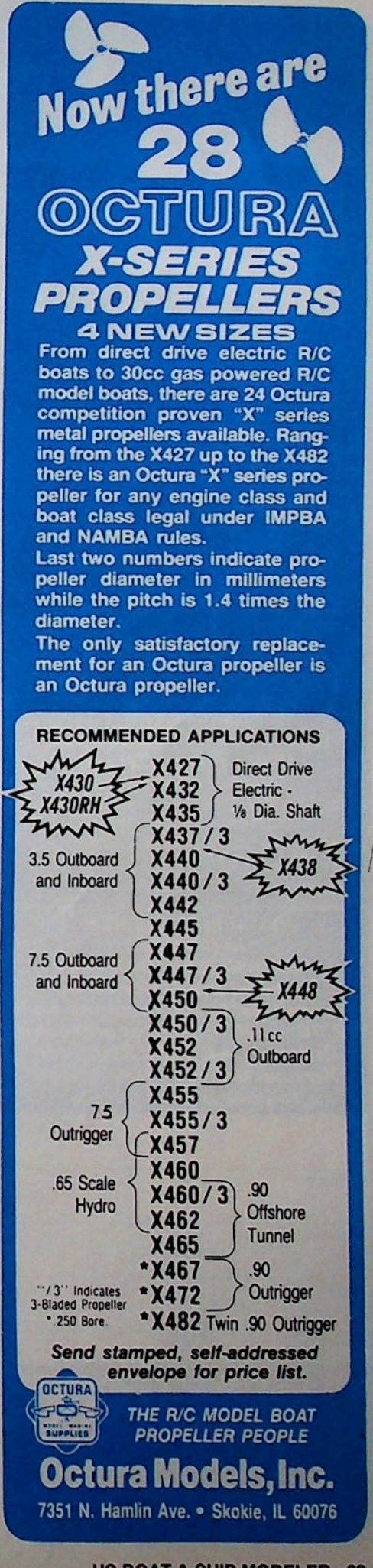
SHEFFIELD *Continued from page 55*

balsa sheet (except for the curved forward surface which is two laminations of 1/64-inch plywood). After the three bridge level boxes are glued together, turn the superstructure and deck over and remove as much of the interior deck material between bridge levels as possible, using a Dremel tool equipped with a sanding cylinder. Apply this procedure to all superstructure boxes . . . it lightens the assemblies and also allows sealing the inside surfaces of all the superstructure with two coats of paint. Apply dope and silkspan to all exterior exposed surfaces of the bridge structure.

The superstructure aft of the deck step is constructed next. Place the middle deck section on the hull frame so that the aft superstructure will be built square and true to the deck. Begin by gluing 1/8-inch square balsa stringers to the main deck to define the top view outline of this superstructure. Allow space for the 1/16-inch thickness of side skin. Glue the 1/16-inch thick by 3/4-inch high plywood sides to these stringers, insuring that the sides are perpendicular to the deck. The grain of the plywood is vertical. Make another barbette 1-1/4 inches high from the PVC tail stock and install it at the X turret location. Sheet the top of this after superstructure with 1/16-inch balsa which is glued on top of the 1/16-inch sides and the 3mm decking forward of the step. Remove the center deck section from the hull and use a drum sander in the Dremel tool to sand away as much of the deck below the after superstructure as you possibly can. Seal all the interior surfaces with two coats of dope. Apply a silkspan and dope finish to all the external superstructure surfaces. Carry the camouflage scheme into the superstructure if you began one on the hull. The after 01 level deckhouse and the searchlight platform just aft of the second funnel are 1/16-inch balsa skinned boxes, glued at the appropriate deck location. Use a drum sander in the Dremel tool to remove plywood deck material directly below the barbettes of turrets B and X; the bb gun assemblies will require this when they are installed.

Construct the two funnels from 1/64-inch plywood wrapped around a balsa and hardwood skeleton. Fasten the forward funnel to the main deck with a screw (from the bottom) so that it can be removed to patch battle damage. Glue the after funnel to the deck. Build four turrets using 1/32-inch plywood profiles for the top and bottom outlines, 1/64-inch plywood sides and a balsa filler piece to form the curved face. Sand the turrets to shape and fabricate barbettes (1/4-inch high) for A turret and Y turret from pieces of 1-1/2 inch diameter PVC tail stock. Glue these barbettes to the bottom of A and Y turrets. Use aluminum tubing to simulate the triple 6-inch guns in these turrets. These dummy turrets are fastened to the deck sections with #2x3/8-inch screws from below the deck. Small superstructure details such as A/A guns, gun directors, etc., are built from balsa, dowel, and plywood. Apply a silkspan and dope finish to all exterior balsa and plywood surfaces in the superstructure. The two mast assemblies are built from 1/8-inch and 5/32-inch diameter aluminum tubing to minimize weight.

See you in the next installment when we finish the Sheffield and arm her for combat! If I can answer any questions for you, call me at (708) 620-5835, or drop me a line. Tom Jass, 312 E. Circle Ave., Lombard, IL 60148. •



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TURNER *Continued from page 19*

lon, or hardwood such as oak or maple. Use a drill press to bore the appropriate holes for the mast and booms, then round off all the sharp corners. The new mast will need a 4mm machine screw in the bottom to match the old mast and an aluminum masthead fitting at the top.

Once the mast and boom assembly is done, a suit of sails must be constructed. A number of materials can be used but the easiest to work with is a model airplane covering called Micafilm, by Coverite. It comes in various colors and is available at many hobby shops. It can be sewn, but it is suggested that the sails be assembled with 1/2-inch double-sided tape used for do-it-yourself storm windows. Use the original nylon sail as a guide for making the new ones.

Draw full size sail patterns on poster board and cut out along the curved edges. Unroll the Micafilm on a flat surface and cut off enough for the mainsail, leaving a generous margin. The luff is folded over to enclose the mast and taped or sewn into place . . . look at how the nylon sail that came with the kit is done. Once the luff is done, lay the pattern down and trace around it with a marker, then cut out the sail. The corner reinforcements are several layers of Micafilm with eyelets for the tiedown lines. The jib is made the same way except the luff pocket is only large enough for a piece of braided steel leader wire to pass through to attach to the masthead.

The sailplan shown may be modified if you use a different length mast. Just make sure the total sail area is around 600 square inches and at least 70% of it is in the mainsail. Sail roach is optional but if it is more than about an inch, several thin plastic battens will be needed on each sail.

When the sails are mounted on the mast, the jibstay should be tight enough to slightly bow the jib boom. The sail luffs should be tight enough to take out any wrinkles and the "backstay" is tightened to bow the main boom upward just a little. Mount the swing rig on the boat, check the sheeting and mast rotation and make any needed adjustments. It should be the same as the old rig. The aft end of the jib club is tied to the mast so it can swing about an inch either side of the mast.

Sailing TINA with the swing rig is very similar to sailing with the original cat rig. She goes much better in light to medium wind and handles very well. A "wing and wing" is easy! The additional sail area does make TINA more prone to lay over, so you may want to replace the steel shot ballast with an equal weight of lead shot. The lead will get the center of gravity lower and will provide more force to keep the boat upright during the puffs.

If you have a TINA sitting around just waiting for a windy day, give the swing rig a try. I think you'll be surprised at how well she can do in light wind.

Addendum: There is no reason why similar swing rigs can't be used on other sailboats. It is suggested that the mast rotate inside a 3/4-inch PVC tube fitted with end caps as bearings. These are available at hardware stores. The tube is inserted in a hole in the deck and will keep water out of the hull. You're on your own as far as adapting the swing rig to your boat, but the mast tube will need to be moved at least a couple of inches forward of the normal mast location. A much higher aspect ratio sail plan and a carbon fiber mast would be appropriate on a competition model. •

REVIEW *Continued from page 14*

flowing into the area to receive special assault training and to participate in realistic exercises all cloaked in the greatest secrecy. The author begins, rightly enough, at the beginning, when the British citizens of South Hams were ordered to evacuate their land so that it can be turned into an invasion training ground. He describes the arrival of the Armies, the nature of the training, and the way the exercises were conducted. The author concentrates on first hand accounts and interviews to give the reader a sense of what the people, soldiers, and sailors were experiencing and how they felt at the time. Those feelings, and the organization of the exercises, were to play a crucial role in the chain of events that led to the tragedy.

The second half of the book recounts the aftermath, starting with the cover-up and how evidence was quickly obscured for a variety of reasons. The muddle of facts, secrecy and rumors became the legacy of the survivors coming to grips with the reality and seeking some logic to what had happened. While the story has been reconstructed, many answers are still missing and may never be known. Exercise Tiger is a painful but necessary accounting and gives the reader a view into a sad side of America's D-Day experience. •

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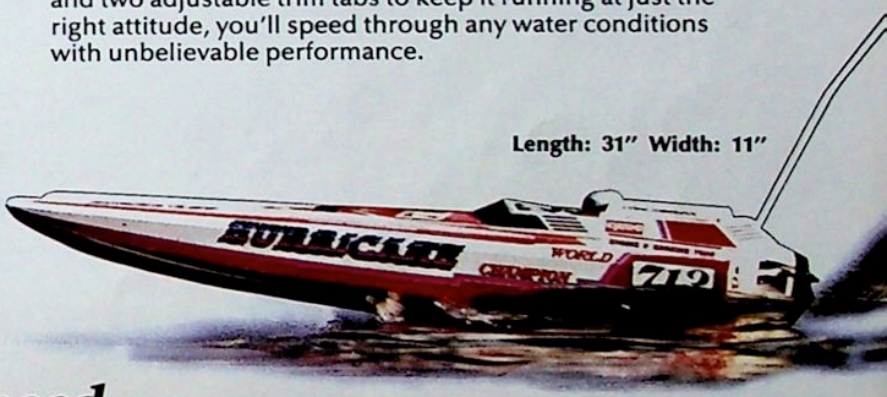

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